THE THELEPHORACEAE OF NORTH AMERICA VI[1]

HYPOCHNUS

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HYPOCHNUS

Hypochnus Fries emend. Karsten, Rev. Myc. 3^9:23. 1881; Finska Vetenskaps-Soc. Bidrag Natur och Folk **37**:162. 1882; Finl. Basidsv. 438. 1889; Fries, Obs. Myc. **2**:278. 1818 and 1824, (in part); Syst. Myc. **3**:289. 1829, (in part); Gen. Hym. 16. 1836, (in part); Epicr. 569. 1838, (in part); Sacc. Syll. Fung. **6**:653. 1888, (in part); R. Fries, R. Sci. Soc. Gothoburgens Actis IV. **3**:37. 1900. — *Hypochnus* as a subgenus of *Corticium* Fries, Hym. Eur. 659. 1874, (in part). — *Tomentella* Persoon ex Patouillard,[2] Hym. Eur. 154. 1887; Schroeter,[2] Krypt.-Fl. Schlesien **3**:419. 1888; Engl. & Prantl, Nat. Pflanzenfam. (**I**:1**) :117. 1898. — *Tomentellina* v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1604. 1906.

Fructifications resupinate, effused, dry, coriaceous, felt-like or hypochnoid, usually composed of loosely interwoven hyphae which bear basidia sometimes in scattered clusters but more usually in a compact hymenium; hymenium even or papillose; basidia simple, bearing two or more spores, rough-walled to echinulate, distinctly colored in most species, pale-colored in a few, and hyaline in one or possibly more species.

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[1] Issued September 30, 1916.

[2] Patouillard and Schroeter, in the works cited above, attributed *Tomentella* to Persoon, because he used this word in parenthesis in the names of two species in his published note-book, Obs. Myc. 2:18 and 19, 1799, as follows:

"27. Corticium (Tomentella) ferrugineum.
"28. Corticium (Tomentella) chalibeum."

This is not generic publication of Tomentella. Why Persoon used the word is not evident; he did not adopt it as a genus in his following formal taxonomic works: 'Synopsis Fungorum' published in 1801, and 'Mycologia Europaea,' in 1822. Generic publication of *Tomentella* was not made until 1887 by Patouillard six years after Karsten's emendation of Hypochnus; hence *Tomentella* is a synonym of *Hypochnus*.

Hypochnus is separated from *Thelephora,* as I have limited the latter, by strictly resupinate habit; from *Corticium* and *Peniophora* by rough-walled to echinulate spores which are usually, but not always, distinctly colored; from *Zygodesmus* of the *Hyphomycetes* by true basidia which bear two or more spores; and from *Grandinia* and *Odontia* of the *Hydnaceae* by loosely interwoven, hypochnoid structure and more or less colored, rough-walled to echinulate spores.

As here treated, the species of *Hypochnus* form a natural, compact group at the foot of *Hymenomycetes,* with simple basidia, and closely resembling *Zygodesmus* in general habit and also in form and color of spores. *Hypochnus* is so closely related to *Thelephora* and *Grandinia* that many of its species have been published in those genera, as will be seen by the synonymy of species, or occur in those genera under manuscript names in the large herbaria.

The species of *Hypochnus* are apparently humus formers, for the fructifications are found under very rotten wood and other organic matter rather than on nearly sound wood. Hence they probably follow other fungi in wood destruction.

This is the first presentation of the North American species of *Hypochnus.* It shows the geographical distribution of the genus localized in the northeastern United States and along our Atlantic coast and ranging westward across the northern United States. Not an *Hypochnus* has been found in a series of 175 numbers of *Thelephoraceae,* mostly resupinate, collected by Dr. and Mrs. Murrill in Mexico.

The sketches of microscopic details of the species in this part were made by the aid of a camera lucida from preparations of such type or authentic specimens as are referred to in the accompanying text.

The development of the present conception of *Hypochnus* is of historical interest. When first published, *Hypochnus* comprised species which I refer to *Hypochnus* and *Corticium;* then tropical lichens predominated; in his last work Fries excluded the lichens, recognized the close relationship to *Corticium* and placed both *Coniophora* and *Hypochnus* as subgenera of *Corticium.* As several species of *Corticium* were still included in *Hypochnus,* Fries had good reason for regarding *Hypochnus* in his sense as closely related to *Corticium.* Karsten's emendation of *Hypochnus* a few years later was logical, and in sympathy with the work of Fries, for it retained this name for the greatest number of cogeneric species both originally published in the genus and retained in the final work of Fries. These species are furthermore the only species for which the generic name *Hypochnus* can be retained, for the other species of the subgenus in Fries' 'Hymenomycetes Europeae' revert to *Corticium* under modern study.

Hypochnus, as presented in Saccardo's 'Sylloge Fungorum,' is an aggregation of species of several genera and includes also the tropical lichens which Fries excluded from the genus in 1874. *Hypochnus* as given in Engler & Prantl's 'Die Natürlichen Pflanzenfamilien,' is the presentation of a purely academic scheme of Schroeter's as to how the lower *Hymenomycetes* ought to be classified to have a family *Hypochnacei,* but the fungi do not fall in with the scheme. They cannot be separated from *Corticium* and *Peniophora.* Von Höhnel and P. Sydow have pointed out [1] that *Hypochnus* in the sense of Schroeter must be abandoned as a genus and its species take their proper places in other genera. It is to be regretted that Saccardo's 'Sylloge Fungorum' and Engler & Prantl's 'Die Natürlichen Pflanzenfamilien' give a false lead with regard to *Hypochnus,* for these works are the main reliance of plant pathologists in the matter of genera.

KEY TO THE SPECIES

Spores distinctly colored as seen with the microscope 1
Spores so pale yellowish or hyaline as to appear hyaline or nearly so under the microscope.. 16
1. Fructification "ferruginous," i. e., Sudan-brown,* Brussels-brown, and hazel of Ridgway; spores concolorous with the fructification, but wax-yellow under the microscope.................................... 2

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[1] Ann. Myc. 4:551. 1906. See also von Höhnel & Litschauer, Ann. Myc. 4:288. 1906.

*The technical color terms used in this work are those of Ridgway, Color Standards and Nomenclature. Washington, D. C., 1912.

1. Fructification not "ferruginous"; spores not wax-yellow under the microscope 4

2. Without cystidia 3

2. With cystidia consisting of non-incrusted, cylindric organs protruding from the hymenium .... *4. H. canadensis*

3. Fructification adnate; all hyphae colored like the spores; spores echinulate .... *1. H. ferrugineus*

3. Fructification separable from substratum; all hyphae colored like the spores; spores aculeate .... *2. H. rubiginosus*

3. Fructification separable; hyphae dark-colored next to substratum; subhymenial hyphae colored like the spores; spores echinulate *3. H. subferrugineus*

4. Hyphae not nodose-septate, i. e., not having clamp connections 5

4. Hyphae nodose-septate, i. e., with clamp connections 6

5. Fructification ranging from drab to fuscous and Chaetura-drab, separable; spores and hyphae concolorous, dark olive-buff to buffy brown under the microscope; hyphae 4–5μ in diameter; spores aculeate or coarsely tuberculate .... *5. H. umbrinus*

5. Fructification vinaceous-brown becoming Rood's brown, adnate; hyphae colored next to substratum, hyaline in subhymenium, 4–5μ in diameter; spores umber, aculeate, the body 5–6μ in diameter or 5–6×4–5μ .... *21. H. subvinosus*

5. Fructification deep olive-buff to dark olive-buff, adnate; spores and hyphae concolorous; hyphae near the substratum 8–10μ, or more, in diameter; spores echinulate, the body 7–9μ in diameter .... *12. H. isabellinus*

6. Without cystidia 7

6. With cystidia consisting of non-incrusted cylindric organs protruding from the hymenium .... *11. H. pilosus*

7. Margin of the same color as the hymenial surface 8

7. Margin of different color from the hymenial surface 12

8. Fructification dark-colored — cinnamon-drab, umber, sepia, fuscous — and the hyphae concolorous 9

8. Fructification sepia or citrine, and the hyphae yellowish or hyaline under the microscope after treatment with KHO solution 10

8. Fructification varying in brown from Saccardo's umber and snuff-brown to cinnamon-brown; hyphae and spores concolorous with the fructification; spores echinulate, the body 6–8×5–7μ .... *13. H. pannosus*

8. Fructification between cartridge-buff and olive-buff; hyphae and spores snuff-brown under the microscope; known from Washington only .... *14. H. avellaneus*

8. Fructification drab or gray, and the hyphae hyaline under the microscope 11

9. Fructification with a distinct vinaceous tinge, 250–350μ thick; hyphae suberect, not rough-walled, often collapsed, rather paler than the spores under the microscope; spores aculeate or echinulate .... *6. H. fuscus*

9. Fructification varying from Saccardo's umber to bister, rarely fuscous, 200–1200μ thick; hyphae thick-walled, not rough-walled, extending in all directions in the subiculum and loosely interwoven; spores echinulate .... *7. H. spongiosus*

9. Resembling *H. spongiosus* but many hyphae have the wall minutely spinulose or rough; known from New Hampshire and Massachusetts .... *8. H. spiniferus*

10. Fructification sepia, separable, 200–400μ thick; hyphae thin-walled, loosely interwoven, 2½–4μ in diameter, with some rope-like strands next to substratum; no noteworthy color change caused in sections by KHO solution .... *9. H. granulosus*

10. Fructification citrine, adnate, the color destroyed and dissolved by KHO solution which becomes colored brownish; hyphae thin-walled, 5–6μ in diameter .... *10. H. olivascens*

11. Fructification byssoid, drab, adnate, 60–75μ thick; hyphae short-celled, irregular in form and diameter, 4–6μ in diameter; spores grayish olive under the microscope, echinulate; known from New Hampshire .... *15. H. sparsus*

11. Fructification felty-membranaceous, light mineral-gray, 400μ thick, two-layered; hyphae 4μ in diameter; spores deep olive-buff to hyaline under the microscope, rough-walled or aculeate with very short points; on ground in Massachusetts..................................*16. H. epigaeus*

12. Fructification separable from substratum when moistened........ 13

12. Fructification adnate, fawn-color, under side and margin whitish; hyphae suberect, thin-walled, 2½–3μ in diameter, hyaline under the microscope; known from Washington................*22. H. cervinus*

13. KHO solution causes a color change when added to sections immersed in a drop of water in making preparations................................ 14

13. KHO solution causes no noteworthy color change...................... 15

14. A change of color to between blue-green and sage-green is caused in the granules; fructification Chaetura-drab to fuscous, granular, the margin much paler, brownish and floccose; hyphae somewhat colored, 3–4μ in diameter.......................*17. H. botryoides*

14. A change of color to sage-green is caused in the hymenium; fructification brownish olive, granular, the margin ochraceous-tawny; hyphae somewhat colored, only occasionally nodose-septate, 2½–3½μ in diameter, forming occasional rope-like strands next to substratum. ....*18. H. coriarius*

14. Original colors are destroyed and the hyphae become sage-green; fructification olive-ocher at surface, with under side and margin brownish drab; hyphae 3μ in diameter, with some rope-like hyphal strands next to substratum............................*19. H. bicolor*

15. Fructification between walnut-brown and Vandyke-brown (a ''dark red'') and the margin Isabella-color or melleus; hyphae colored, 5–6μ in diameter, with rope-like strands next the substratum ....*20. H. atroruber*

15. Fructification with upper side pinkish buff to Isabella-color, the under side and margin bister; hyphae, 5–7μ in diameter, run along the substratum and give off suberect, interwoven, colored branches 3½–4½μ in diameter — no rope-like strands ....*23. H. fuligineus*

15. Fructification drab-gray, the margin whitish; hyphae hyaline under the microscope ....*24. H. cinerascens*

16. Hyphae not nodose-septate, i. e., not having clamp connections 17

16. Hyphae nodose-septate.. 18

17. With cystidia; fructification pinkish buff, adnate .....*25. H. peniophoroides*

17. Without cystidia; fructification becoming warm buff, thick, and firm, like *Corticium portentosum;* hyphae 2μ in diameter, terminating in the hymenium in dichotomously branched, antler-shaped organs; basidiospores hyaline or nearly so; even spores, colored like the hyphae, abundant between the hyphae...............................*26. H. thelephoroides*

17. Without cystidia; fructification pinkish buff to cinnamon-buff and avellaneous; hyphae 3½–5μ in diameter, forming some rope-like strands next to substratum; spores with a slight tinge of buff in collection on slide but hyaline under the microscope, echinulate, the body 5–6×4–4½μ. ....*27. H. zygodesmoides*

17. Without cystidia; fructification Naples-yellow to deep colonial buff; hyphae 3–4μ in diameter, not forming rope-like strands; spores concolorous but sometimes hyaline under the microscope, echinulate, the body 4–5μ in diameter ....*28. H. echinosporus*

18. Fructification between olive-buff and deep olive-buff; spores concolorous, very pale under the microscope..............*29. H. fibrillosus*

18. Fructification honey-yellow to drab and fuscous, the margin whitish or yellowish, flaxy-fibrillose, radiating; spores white in collection on slide, minutely echinulate with short, crowded spines, body 3–5×2½–3½μ...................................*30. H. fumosus*

1. Hypochnus ferrugineus Pers. ex Fries, Obs. Myc. **2**:280. 1818 and 1824; Karsten, Finska Vetenskaps-Soc. Bidrag Natur och Folk **37**:162. 1882; Finl. Basidsv. 440. 1889;

Sacc. Syll. Fung. **6**:660. 1888; Bresadola, (Hym. Hung. Kmet.), I. R. Accad. Agiati Atti III. **3**:114. 1897.

Corticium (Tomentella) ferrugineum Persoon, Obs. Myc. **2**:18. 1799. — *Thelephora ferruginea* Persoon, Syn. Fung. **2**:578. 1801; Myc. Eur. **1**:141. 1822; Fries, Elenchus Fung. **1**:198. 1828; Epicr. 543. 1838. — *Corticium ferrugineum* subgenus *Hypochnus* Fries, Hym. Eur. 661. 1874. — *Hypochnus ferruginosus* (Fr.) Patouillard, Tab. Anal. Fung. 17. *f. 26.* 1883. — *Tomentella ferruginea* Pers. ex Schroeter, Krypt.-Fl. Schlesien **3**:419. 1888.

Illustrations: Patouillard, Tab. Anal. Fung. *f. 26.*

Fructification effused, adnate, often suborbicular, thin, dry, tomentose, hypochnoid, drying Sudan-brown; structure in section about 300μ thick, composed of loosely interwoven, even-walled hyphae $4\frac{1}{2}$–5μ in diameter, nodose-septate, concolorous through the whole fructification with the hymenium; no cystidia; basidia 4-spored; spores subglobose, concolorous with the fructification, echinulate, body of spore about 7–8μ in diameter.

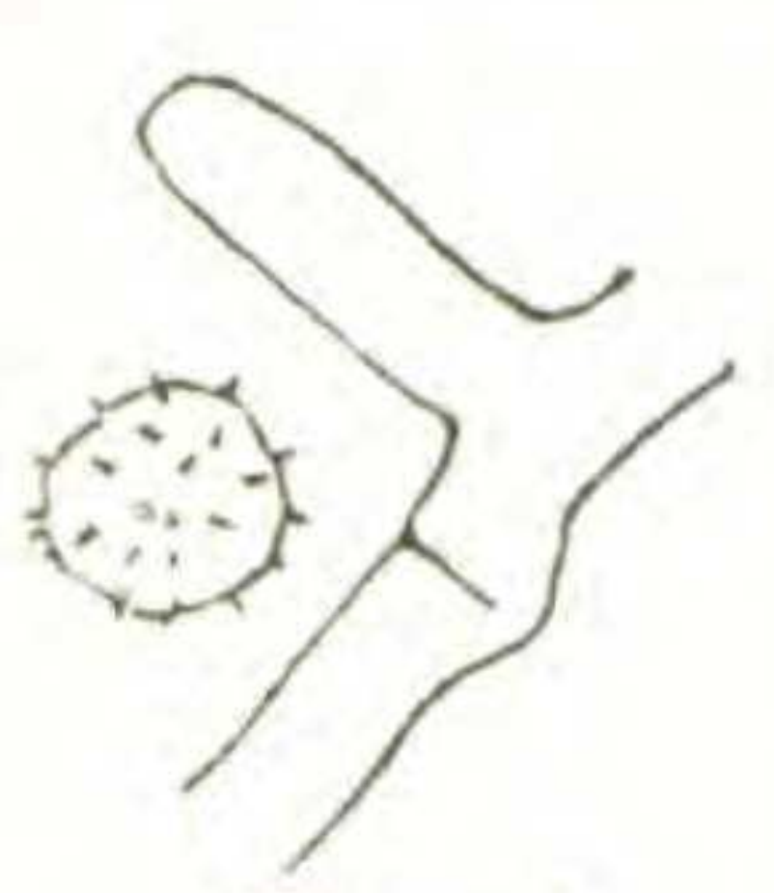

Fig. 1
H. ferrugineus.
Hypha, spore
×640.

Fructifications 2–4 cm. in diameter or 3–6 cm. long, about 2–3 cm. broad.

Under side decaying limbs and logs of various frondose species. Canada and New Brunswick to Georgia and westward to Michigan. July to October. Occasional.

This species is well marked by its very constant color, common to both hyphae and spores, and its occurrence in adnate, small, and very thin, hypochnoid areas of the form and dimensions given. American collections agree closely in above respects with the European specimens received from Bresadola which he has noted as surely *H. ferrugineus.*

Specimens examined:[1]

Sweden: Femsjö, *L. Romell, 225, 227.*

Austria-Hungary: Trentino, *G. Bresadola;* Tatra Magna,

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[1] With regard to the citation of specimens, all except those of "Exsiccati" are in Burt Herbarium, which are cited without explicit reference to place in other herbaria. For example, the specimens cited "Sweden: Femsjö, *L. Romell, 225, 227,*" are in Burt Herbarium. The data given is that received with the

Löcse, *V. Greschik,* comm. by G. Bresadola.
New Brunswick: Campobello, *W. G. Farlow.*
New Hampshire: Chocorua, *W. G. Farlow.*
Massachusetts: Belmont Spring, *C. Bullard,* comm. by W. G. Farlow; Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow.
New York: Alcove, *C. L. Shear, 1316,* in part; East Galway, *E. A. Burt,* two collections.
Georgia: Tallulah Falls, *A. B. Seymour,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43911).
Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 876.*

2. **H. rubiginosus** Bresadola, (Hym. Hung. Kmet.), I. R. Accad. Agiati Atti III. **3**:114. 1897.

Zygodesmus rubiginosus Peck, N. Y. State Mus. Rept. **30**:58. 1879. — *Tomentella rubiginosa* (Bres.) R. Maire, Ann. Myc. **4**:335. 1906.

Type: in Bresadola Herb.; probably a portion in Burt Herb.

Fructifications effused, membranaceous, somewhat separable from the substratum, dry, tomentose, drying Brussels-brown; hymenium even or granular; structure in section about 200–300μ thick, with all the hyphae bright-colored and giving their color to the fructification, about 3μ in diameter, nodose-septate, thin-walled, lax, loosely interwoven towards the hymenium, longitudinally arranged next to the substratum, and occasionally consolidated there in rope-like, branching strands up to 15μ in diameter; no cystidia; spores concolorous with the fructification or more intensely colored, subglobose-angular, aculeate, body about 6–7μ in diameter, or 7–8$\times$6μ.

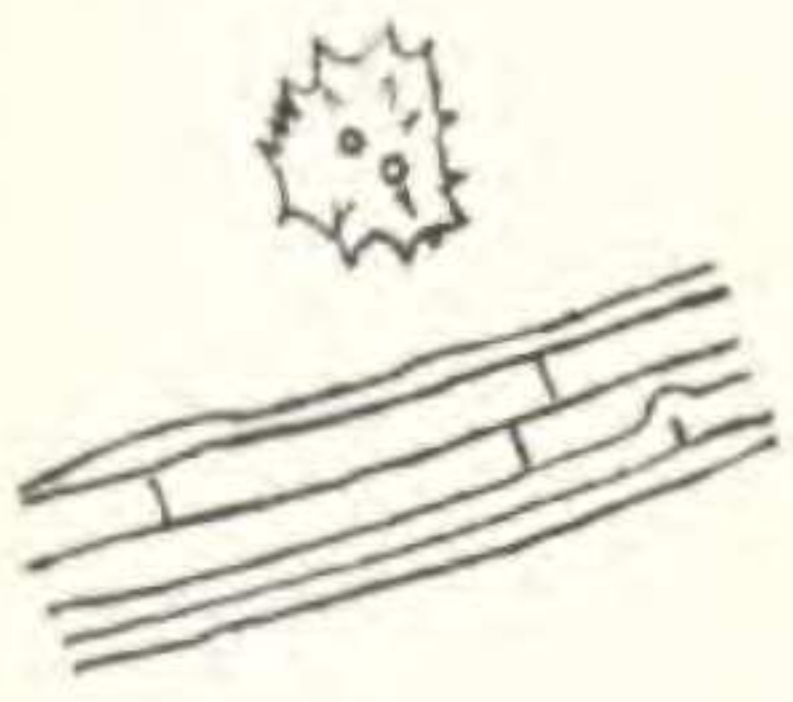

Fig. 2
H. rubiginosus. Hyphal strand, spore$\times$640.

Fructifications about 1½–3 cm. long, 1–2 cm. broad.

On decaying leaves and decaying wood. Canada, New York, Louisiana, and British Columbia. October. Rare.

specimens and may identify duplicates in another herbarium. The location of all specimens in herbaria other than my own is designated by giving in parenthesis the name of the herbarium preceded by "in." For example, the specimen cited "Georgia: Tallulah Falls, *A. B. Seymour,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43911)," is in Missouri Botanical Garden Herbarium, but not in Burt Herbarium.

H. rubiginosus is very similar in color throughout to *H. ferrugineus* but differs in being membranaceous, in having spores aculeate rather than spinulose, and in having some hyphae parallel with substratum and occasionally forming rope-like strands. These strands are not mentioned by Bresadola in his description, but they are present in preparations from the specimen received from him and also in those from the few American collections referable to this species.

Specimens examined:

Hungary: on leaves of *Juniperus* and *Quercus,* Oct., 1888, *Kmet,* comm. by G. Bresadola, apparently part of type.

Canada: Lower St. Lawrence Valley, *J. Macoun, 77.*

New York: Greenbush, *C. H. Peck,* type of *Zygodesmus rubiginosus* (in Coll. N. Y. State); Alcove, *C. L. Shear, 1329;* Syracuse, *L. M. Underwood, 36, 41* (both in Coll. N. Y. State).

Louisiana: St. Martinville, *A. B. Langlois, ct.*

British Columbia: Sidney, *J. Macoun, 80,* in part (in Mo. Bot. Gard. Herb., 8935).

3. **H. subferrugineus** Burt, n. sp.

Type: in Burt Herb.

Fructification effused, dry, membranaceous, separable from the substratum as a thin membrane, tomentose, drying Sudan-brown, with surface often granular in the center; structure in section 300–400μ thick, composed of (1) a few dark-colored, nodose-septate hyphae 5–6μ in diameter, running parallel with the substratum, loosely interwoven or sometimes in rope-like strands which give off (2) suberect, bright-colored, interwoven branches, concolorous with the hymenium, bearing the basidia; basidia 4-spored; spores concolorous with the hymenium, subglobose, echinulate, with spore body 7–9$\times$6–8μ; some color is dissolved from the sections when they are treated with KHO solution.

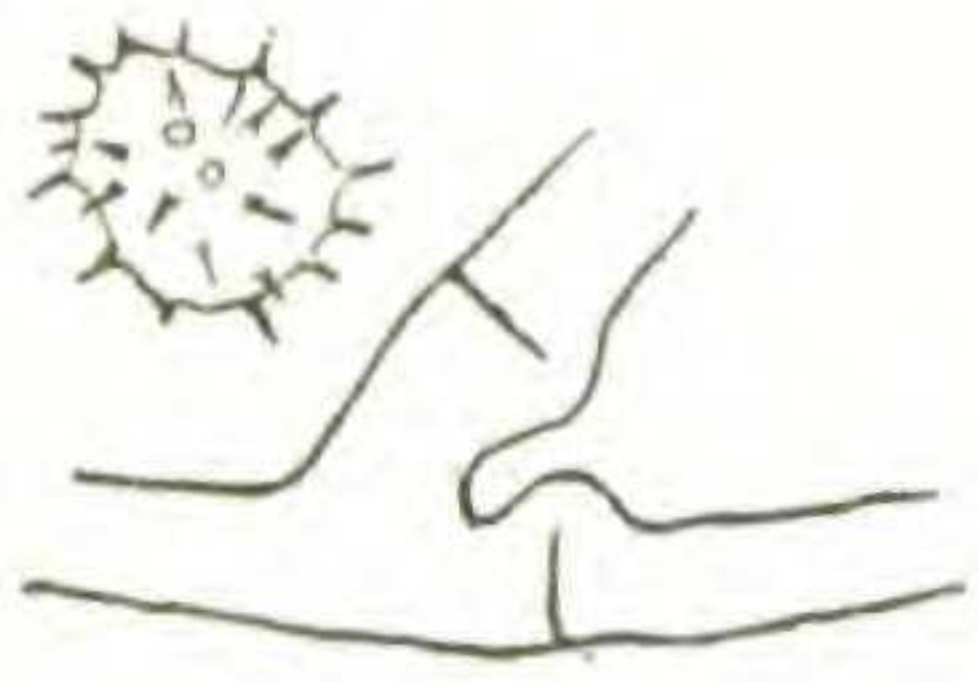

Fig. 3
H. subferrugineus.
Hypha, spore×640.

Fructifications 2–5 cm. long, about 2–3 cm. broad.

Under side of decaying limbs and logs of both coniferous and frondose species. Canada and New England to Michigan, and in British Columbia; also in Sweden. August to October. Occasional.

This species has the same color externally as *H. ferrugineus,* from which it differs in being more compact, so that it is membranaceous and may be cautiously peeled up from the substratum. Dried specimens often have their central portion cracked and curled away from the substratum, while *H. ferrugineus* is adnate. Furthermore, *H. subferrugineus* has hyphae next to the substratum dark-colored and arranged longitudinally along the surface of the substratum, which is not the case in *H. ferrugineus.*

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 421, under the name *Zygodesmus rubiginosus.*

Sweden: Femsjö, *L. Romell, 233.*

Canada: definite locality not stated, *J. Macoun, 11;* St. Lawrence Valley, *J. Macoun, 20.*

New Hampshire: Chocorua, *W. G. Farlow, 1, 3,* a collection dated Sept., 1903, and a collection dated 1915 — the last (in Mo. Bot. Gard. Herb.).

Vermont: Middlebury, *E. A. Burt,* two collections.

New York: Sylvan Beach, Oneida Co., *H. D. House* (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 5893).

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 421.

Michigan: Ann Arbor, *A. H. W. Povah, 4* (in Mo. Bot. Gard. Herb., 11774).

British Columbia: Sidney, *J. Macoun, 26,* in part (in Mo. Bot. Gard. Herb., 8933).

4. **H. canadensis** Burt, n. sp.

Type: in Burt Herb.

Fructifications small, effused, membranaceous, easily separable from the substratum, dry, tomentose, drying between Brussels-brown and hazel, the margin very thin, fibrous;

hymenium even or granular; in structure 400–500μ thick, composed (1) next to the substratum of a few dark-colored, longitudinally arranged, nodose-septate hyphae 4–4½μ in diameter, and (2) towards the hymenium of pale, thin and even-walled hyphae about 2½–3μ in diameter, suberect, very loosely interwoven, which arise as lateral branches from the dark basal hyphae and bear basidia and cystidia; cystidia septate, cylindric, obtuse, even-walled, Saccardo's umber in color under the microscope, 4½–5μ in diameter, emerging up to 80–100μ; basidia 4-spored with the spores on slender sterigmata about 6μ long; spores Saccardo's umber under the microscope, globose, tuberculate, spore body 6–7μ in diameter.

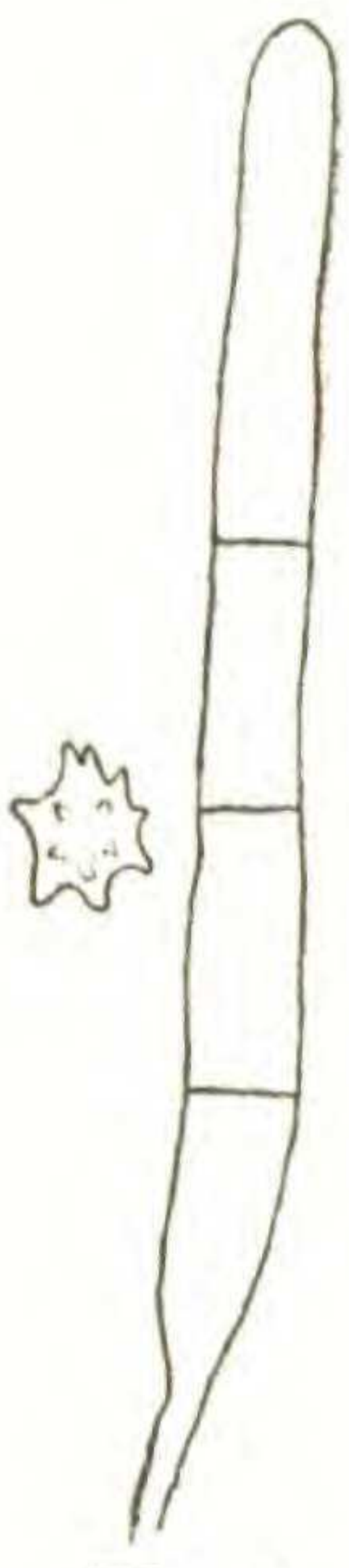

Fig. 4 H. canadensis. Cystidium, spore ×640.

Fructification usually 1–2 cm. long, ½–1 cm. broad, one specimen 4 cm. long.

On wood and bark of conifers decaying on the forest floor. Canada and New Hampshire to Idaho and British Columbia. August to November.

H. canadensis is a little darker in color than *H. ferrugineus* and is smaller and less conspicuous in the few collections which have been made. It differs from our other rust-colored species of *Hypochnus* in having cystidia. It is related to the European **Hypochnus ferruginosus** (v. Höhn. & Litsch.) Burt, n. comb., = *Tomentellina ferruginosa* v. Höhn. & Litsch, by the colored, cylindric cystidia, but the cystidia of our species are shorter and its hyphae finer, darker, and nodose-septate next to the substratum.

Specimens examined:

Canada: locality not stated, *J. Macoun, 11.*

Quebec: Ironsides, *J. Macoun, 277b.*

New Hampshire: Chocorua, *W. G. Farlow, 2,* and *c4* (the latter in Mo. Bot. Gard. Herb., 44039).

Vermont: Middlebury, *E. A. Burt,* type.

Michigan: Ann Arbor, *C. H. Kauffman, 36.*

Idaho: Priest River, *J. R. Weir, 1.*

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir, 504* (in Mo. Bot. Gard. Herb.).

5. H. umbrinus (Fries) Burt, n. comb.

Thelephora umbrina Fries, Elenchus Fung. **1**:199. 1828, but not *T. umbrina* Alb. & Schw. Consp. Fung. 281. 1805. — *Corticium umbrinum* Fries, Hym. Eur. 658. 1874. — *Thelephora biennis* Fries, Hym. Eur. 636. 1874, but not *T. biennis* Fries, Syst. Myc. **1**:449. 1821. — *T. arachnoidea* Berk. & Broome, Linn. Soc. Bot. Jour. **14**:64. 1873, but not *T. arachnoidea* as understood by Bresadola, Ann. Myc. **1**:108. 1903. — *Hypochnus tristis* Karsten, Soc. pro Fauna et Flora Fennica Meddel. **9**:71. 1883; Bresadola, Ann. Myc. **1**:107. 1903. — *Hypochnopsis fuscata* Karsten, Finl. Basidsv. 443. 1889. — *Hypochnus fuscatus* Karsten in Sacc. Syll. Fung. **9**:244. 1891. — *Tomentella tristis* (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**:1572. 1906. — *Hypochnus sitnensis* Bresadola, I. R. Accad. Agiati Atti III. **3**:115. 1897.

Type: in Herb. Fries, and an authentic specimen from Fries in Kew Herb.

Fructification effused, soft, separable, with the hymenial surface compact and membranaceous, varying from drab to fuscous and Chaetura-drab, underneath villose; structure in section 400–600μ thick, with some hyphae running along the substratum and ascending so as to form a loosely arranged layer near the substratum and then branching repeatedly to form a compact hymenium; hyphae concolorous with the fructification, thick-walled, not nodose-septate, not rough-walled, 4–5μ in diameter; basidia with 4 sterigmata; spores concolorous, globose or subglobose, aculeate or coarsely tuberculate, 6–7μ in diameter or 6–8 × 4½–7μ; KHO solution dissolves some pigment from the sections and becomes dark-colored in their vicinity.

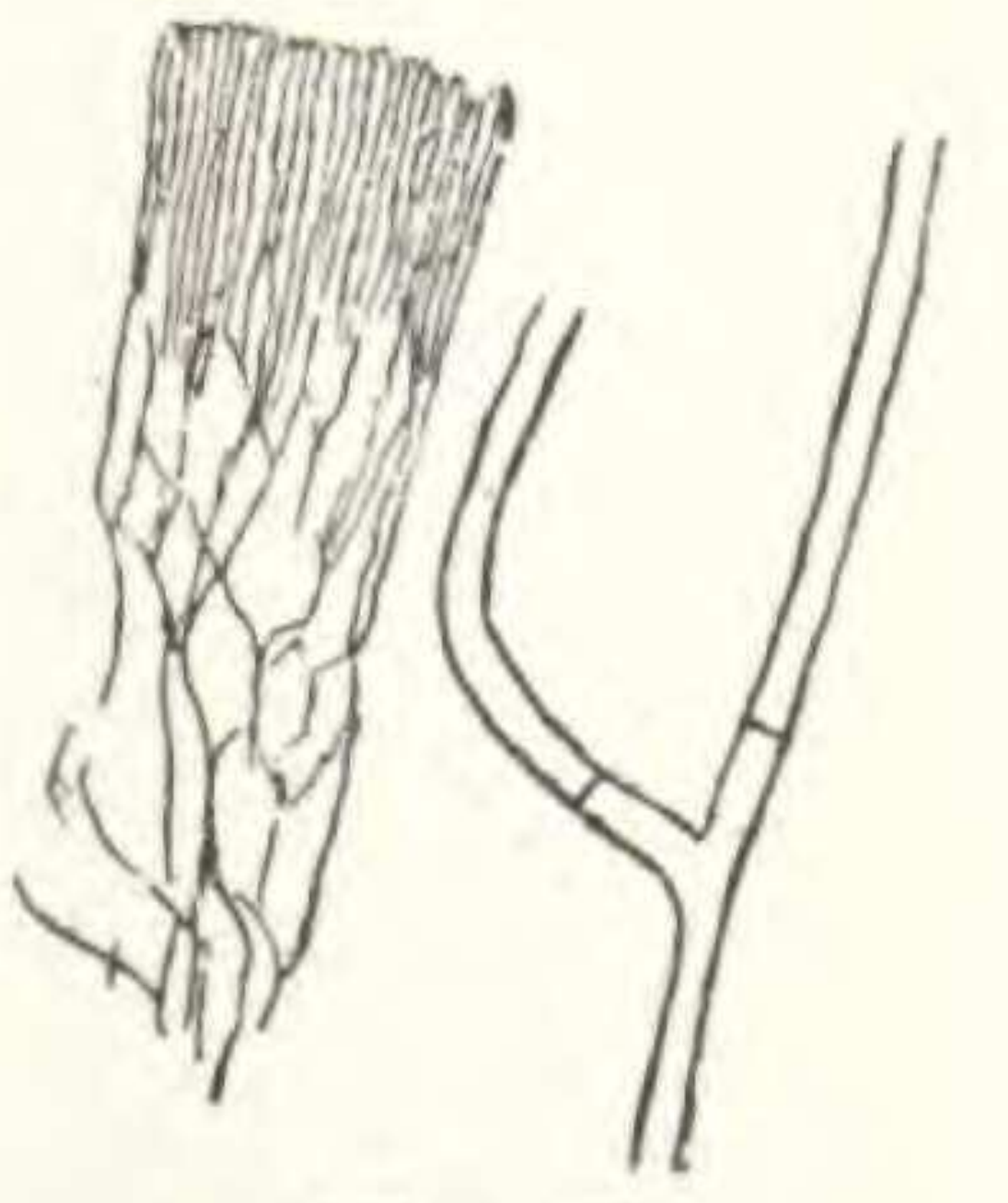
Fig. 5
H. umbrinus.
Section×75
Hypha×640.

Fructifications 6–10 cm. long, 3–5 cm. broad.

On rotting coniferous and frondose wood. New England to British Columbia. September to October. Common and cosmopolitan.

Hypochnus umbrinus (Fr.) is noteworthy among the dark species by its hyphae not being nodose-septate, i. e., not having clamp connections. Its tuberculate or aculeate spores and compact hymenium afford additional distinctive characters.

Thelephora umbrina Alb. & Schw. is regarded now by European botanists as a *Coniophora,* of which I have a specimen from Bresadola; what Fries understood by *T. umbrina* is exactly shown by an authentic specimen in Kew Herbarium. This specimen is a true *Hypochnus* in fine condition, dark-colored, with compact hymenium separated from the substratum by a thick layer of loosely arranged, suberect, thick-walled, colored hyphae, which do not have clamp connections. *T. biennis,* as used by Fries in 1821, is a description of the illustration in Bulliard's 'Herb. de la France' **2**:286. *pl. 436. f. 2.* Fries stated that he had seen no specimens at that time. In 'Hymenomycetes Europaei,' published in 1874, he changed the description of *T. biennis* materially to adapt it to living specimens which he had seen. The resupinate specimen of this later period in Herb. Fries is not distinct from *Hypochnus umbrinus.* Authentic specimens of *H. tristis* and *Hypochnopsis fuscata* received from Karsten, and of *Hypochnus sitnensis* from Bresadola are the same species as already pointed out by Bresadola;[1] still earlier, Romell stated in letters his belief that *H. tristis* is a synonym of *H. umbrinus.* My studies lead to the same conclusion. The type specimen of *Thelephora arachnoidea* Berk. & Broome agrees closely with the Friesian specimen of *H. umbrinus.* Bresadola[2] has described hyphae of *T. arachnoidea* as ''punctato-scabrae vel tunica granoso-aculeolata primitus inductae, usque ad 9μ crassae,'' but in my preparation of the type of *T. arachnoidea* the walls of the hyphae are even and not more than 4½μ in diameter.[3]

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[1] Ann. Myc. **1**:107. 1903.

[2] *Ibid.,* p. 108.

[3] In the same connection Bresadola places *Thelephora floridana* Ell. & Ev. as a synonym of *T. arachnoidea,* and he has been followed in this by von Höhnel. My preparations of the type of *T. floridana* in N. Y. Bot. Gard. Herb. show that this species is not a basidiomycete, and that its hyphae are nodose-septate.

Specimens examined:

Sweden: Smolandia, from E. Fries (in Kew Herb.); Femsjö, *L. Romell, 234, 235,* and *E. A. Burt;* Stockholm, *L. Romell, 229–232.*

Finland: Mustiala, *P. Karsten,* authentic specimen of *H. tristis;* Messuby, *P. Karsten,* authentic specimen of *Hypochnopsis fuscata.*

Hungary: *A. Kmet,* comm. by G. Bresadola, authentic specimen of *Hypochnus sitnensis.*

Ceylon: Habgalla, No. 539, Feb., 1868, the type of *Thelephora arachnoidea* Berk. & Broome (in Kew Herb.).

Canada: *J. Macoun, 64.*

Ontario: Harraby, *E. T. & S. A. Harper, 593.*

New Hampshire: Chocorua, *W. G. Farlow, 9, 13, 14, 15, 22.*

Vermont: Middlebury, *E. A. Burt.*

Massachusetts: Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow.

New York: Lake Placid, *C. H. Peck;* Floodwood, *E. A. Burt.*

Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 860.*

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir, 441, 487* (in Mo. Bot. Gard. Herb., 8227, and 20225 respectively).

6. H. fuscus Pers. ex Fries, Obs. Myc. **2**:280. 1818 and 1824; Karsten, Finska Vetenskaps-Soc. Bidrag Natur och Folk **37**:163. 1882.

Corticium fuscum Persoon, Obs. Myc. **1**:38. 1796; Fries, Hym. Eur. 651. 1874. — *Thelephora fusca* Fries, Syst. Myc. **1**:451. 1821. — *Thelephora vinosa* Persoon, Syn. Fung. **2**:578. 1801. — *Tomentella fusca* (Pers.) Schroeter, Krypt.-Fl. Schlesien **3**:419. 1888.

Type: existence of an authentic specimen unknown to me.

Fructification effused, membranaceous, separable, cinnamon-drab, darkening to Benzo-brown and Natal-brown; structure in section 200–350μ thick, with a few hyphae running along the substratum and ascending and branching or giving off suberect, loosely interwoven branches; hyphae concolorous with the fructification but rather pale under the microscope,

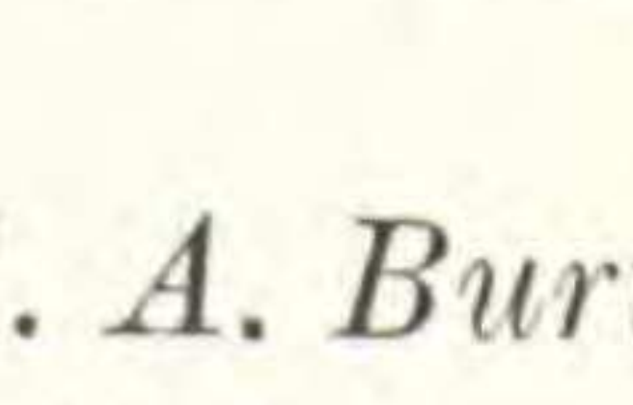

Fig. 6
H. fuscus.
Spores
×640.

nodose-septate, 4–6μ in diameter, sometimes collapsed; basidia with 4 sterigmata; spores darker than the hyphae, subglobose, sometimes flattened on one side, the spore body 6–7μ in diameter and short-aculeate in European and occasional American specimens, but more commonly 6–8 × 6μ and echinulate in American specimens.

Fructifications 2–10 cm. long, 1–2 cm. broad.

On rotten coniferous and frondose wood of several species. Canada and New Brunswick to New Jersey and in Montana. July to October.

In the color of *H. fuscus,* there is a perceptible vinaceous component by which the species may be approximately recognized at sight. Confirmatory characters are the separable fructification and microscopical details of sections. The spores of most American specimens have slenderer and longer spines than those of European collections. *H. fuscus* is presented here as understood by Bresadola.

Specimens examined:

Sweden: Stockholm, *L. Romell, 224.*

Hungary: *A. Kmet,* comm. by G. Bresadola.

Canada: locality not given, *J. Macoun, 14;* Ottawa, *J. Macoun, 28.*

New Brunswick: Campobello, *W. G. Farlow, 4.*

Massachusetts: Magnolia, *W. G. Farlow,* two collections.

New York: Albany, *H. D. House & Jos. Rubinger* (in Mo. Bot. Gard. Herb., 8736); East Galway, *E. A. Burt;* Potsdam, *J. B. Ellis* (in Farlow Herb.).

New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb., under the name *Thelephora floridana*).

Montana: Missoula, *J. R. Weir, 400* (in Mo. Bot. Gard. Herb., 22161).

7. H. spongiosus (Schw.) Burt, n. comb.

Thelephora spongiosa Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**:109. 1822; Am. Phil. Soc. Trans. N. S. **4**:168. 1834; Fries, Elenchus Fung. **1**:193. 1828; Sacc. Syll. Fung. **6**:545. 1888. — *Hypochnus obscuratus* Karsten, Hedwigia **35**:46. 1896; Sacc. Syll. Fung. **14**:226. 1900.

Type: in Herb. Schweinitz.

Fructification effused, soft, felty-membranaceous, separable, in color varying from Saccardo's umber to bister, rarely fuscous, the margin thinning out and barely determinate; in structure 200–1200μ thick, with hyphae concolorous with the fructification, thick-walled, even, loosely interwoven, branching at a wide angle, abundantly nodose-septate, $4\frac{1}{2}$–5μ in diameter or rarely 6μ; basidia with 4 sterigmata; spores concolorous, globose, or subglobose and flattened on one side, echinulate, about 6μ in diameter, or 6–9 × 6–7μ.

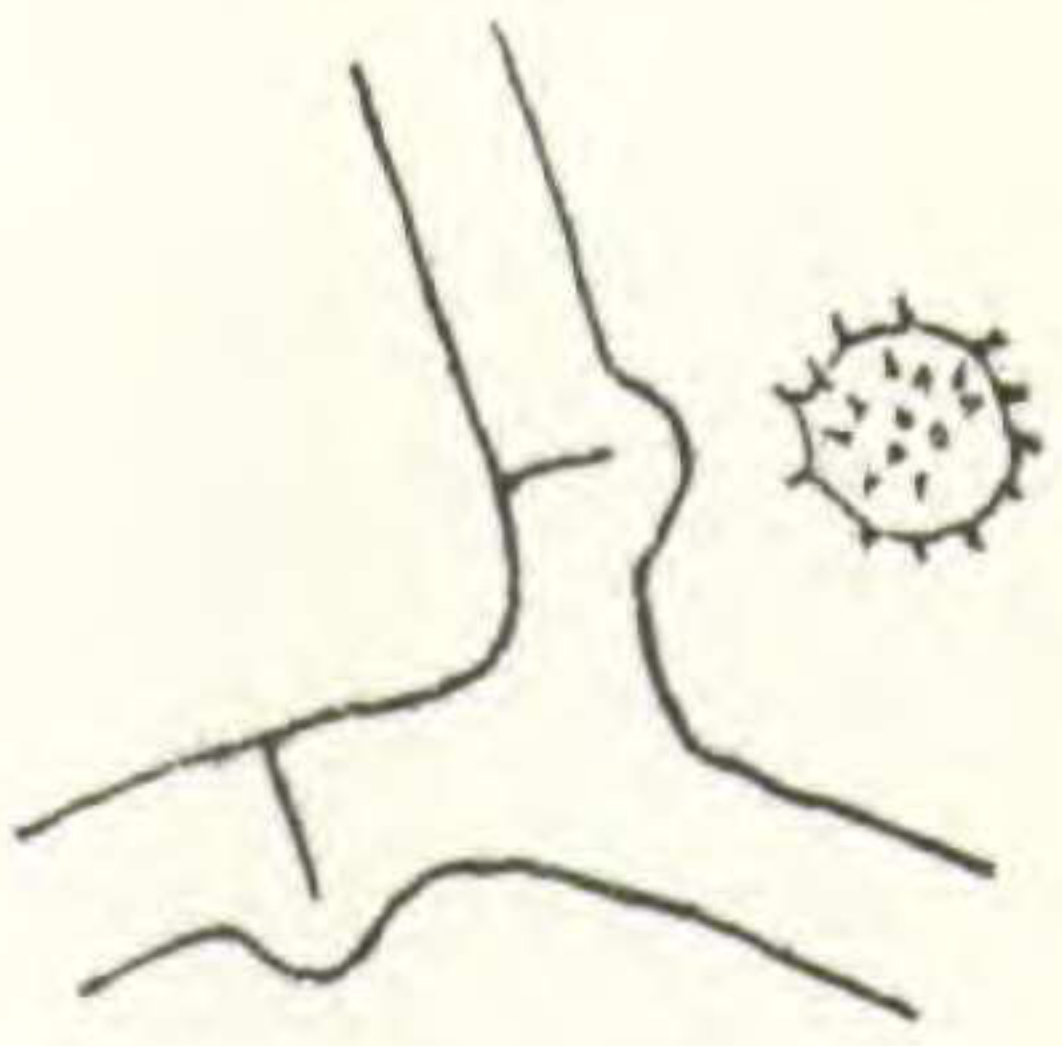

Fig. 7
H. spongiosus.
Hypha, spore
×640.

Fructifications 4–10 cm., and more, long, 2–5 cm. broad.

On rotten wood and bark of both frondose and coniferous species. Canada to North Carolina and westward to Montana, and in Bahama Islands. July to November. Probably common.

H. spongiosus belongs in the group with *H. fuscus, H. umbrinus,* and *H. spiniferus.* The absence of a vinaceous component in its color is a useful character for separation at a glance from *H. fuscus.* If the surface of *H. spongiosus* is viewed with a lens, the component fibers are seen running in all directions, as in felt or blotting paper. *H. umbrinus* has its hyphae lacking clamp connections, i. e., not nodose-septate, and its basidia form a compact hymenium. *H. spiniferus* differs by having its hyphae spiny.

Specimens examined:

Finland: Mustiala, *P. A. Karsten,* authentic specimen of *Hypochnus obscuratus.*

Canada: Quebec, Ironsides, *J. Macoun, 255.*

New Hampshire: Chocorua, *W. G. Farlow, 14.*

Vermont: Middlebury, *E. A. Burt,* three collections; Lake Dunmore, *E. A. Burt.*

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 15833).

North Carolina: *Schweinitz,* type (in Herb. Schweinitz).

Indiana: Miller, *E. T. & S. A. Harper, 758.*

Wisconsin: Lake Geneva, *E. T. & S. A. Harper, 950.*
Montana: Evaro, *J. R. Weir, 436, 438* (in Mo. Bot. Gard. Herb., 19515 and 19597 respectively).
Bahama Islands: *A. E. Wight* (in Farlow Herb.).

8. H. spiniferus Burt, n. sp.

Type: in Farlow Herb. and in Burt Herb.

Fructification effused, membranaceous, separable, tomentose, varying from sepia to fuscous; in structure about 1000μ thick, with the hyphae loosely interwoven, nodose-septate, thick-walled, concolorous with the fructification but darker near the substratum and spinulose, the paler hyphae rough-walled or even, body of largest hyphae 4–5μ in diameter, the spines about 1μ long, colored like the dark wall; basidia with 4 sterigmata; spores concolorous, globose, sometimes flattened on one side, echinulate, the body 6–8μ in diameter, or 6 × 4½–6μ.

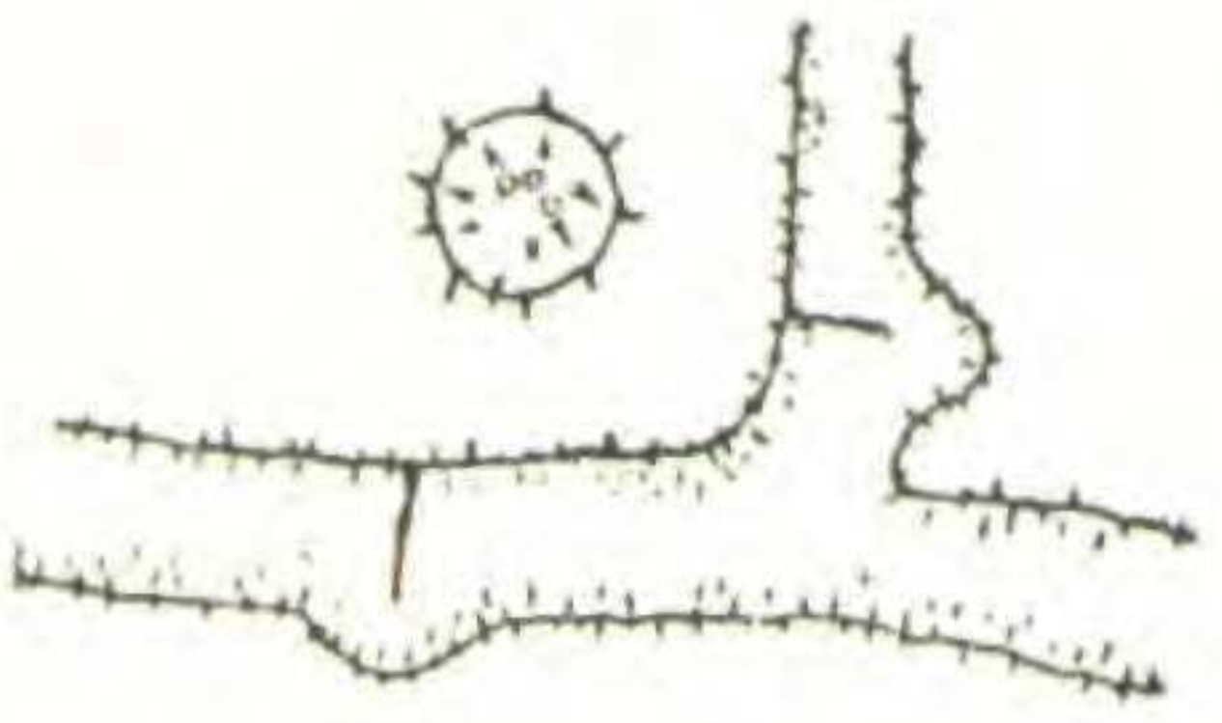

Fig. 8
H. spiniferus
Hypha, spore×640.

Fructifications about 5 cm. long, 3 cm. broad.

On rotten wood. New Hampshire and Massachusetts. August. Rare.

H. spiniferus is so similar to *H. spongiosus* in habit and coloration that it can be separated from the latter only by the distinctly spiny-walled and rough-walled hyphae of the former species. This character is as marked as in the capillitium of some *Myxomycetes.* The New Hampshire collections which I have included under *H. spiniferus* have rough-walled hyphae and no spines.

Specimens examined:
New Hampshire: Chocorua, *W. G. Farlow, 11,* and *an unnumbered specimen* collected in 1904.
Massachusetts: Magnolia, *W. G. Farlow,* type.

9. H. granulosus (Peck) Burt, n. comb.

Grandinia tabacina Cooke & Ellis, Grevillea **9**:103. March, 1881, but not *Hypochnus tabacinus* Bresadola. — *Zygodesmus granulosus* Peck, Bot. Gaz. **6**:277. 1881. — *Hypochnus elaeodes* Bresadola, I. R. Accad. Agiati III. **3**:115. 1897.

Type: in Coll. N. Y. State.

Fructification effused, thin, membranaceous, separable from the substratum, granular, sepia, the margin somewhat radiate, concolorous or nearly so; in structure 200–400μ thick, composed of very loosely interwoven, thin-walled, occasionally nodose-septate, hyphae 2½–4μ in diameter, yellowish under the microscope, forming near the substratum some rope-like mycelial strands up to 15μ in diameter; spores concolorous with the hyphae, angular-subglobose, aculeate, the body about 6μ in diameter; KHO solution produces no noteworthy color change in sections.

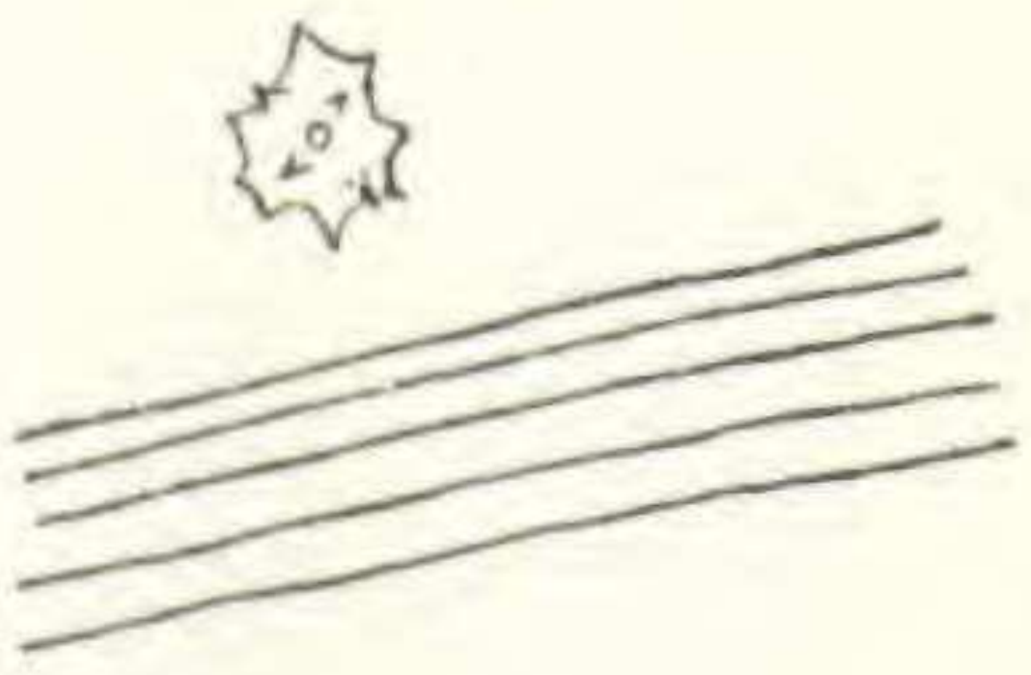

Fig. 9
H. granulosus.
Spore, hyphal strand×640.

Fructifications 2–4 cm. long, 1–2 cm. broad.

On rotten bark and wood of frondose species. Massachusetts to New Jersey and Ohio. September to November. Rare.

H. granulosus is very closely related to *H. coriarius* and is distinguished from it by uniform color of the whole surface, while *H. coriarius* has the margin ochraceous-tawny. The lack of noteworthy color change by KHO solution is the only additional feature of difference for separating *H. granulosus* from *H. coriarius.* The specific name *tabacina* of Cooke and Ellis has priority, but is not now available because Bresadola has already used the name *Hypochnus tabacinus* for a valid species.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 421, under the name *Zygodesmus chlorochaites.*

Hungary: *A. Kmet,* authentic specimen of *H. elaeodes* from Bresadola, probably a portion of the type.

Massachusetts: Newton, *W. G. Farlow;* Mt. Tom, *H. W. Harkness,* type (in Coll. N. Y. State).

New York: Albany, *H. D. House & J. Rubinger* (in Mo. Bot. Gard. Herb., 8733); Karner, *H. D. House* (in Mo. Bot. Gard. Herb., 44731); Alcove, *C. L. Shear, 1316,* in part.

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 421, and also the cotype of *Grandinia tabacina* (in N. Y. Bot. Gard. Herb.).

Ohio: *A. P. Morgan, 525* (in N. Y. Bot. Gard. Herb., under the manuscript name *Odontia olivacea*).

10. H. olivascens (Berk. & Curtis) Burt, n. comb.

Zygodesmus olivascens Berk. & Curtis, Grevillea **3**:145. 1875.

Type: type and cotype in Kew Herb. and in Curtis Herb.

Fructification effused, thin, not separable, tomentose, citrine, yellowish citrine or buffy citrine, the margin thinning out; KHO solution dissolves some of the color upon coming in contact with the sections and becomes somewhat brownish in their vicinity; in structure 150–200μ thick, with now and then a hypha running along the substratum and sending out suberect branches which branch repeatedly, become loosely interwoven, and are somewhat clustered; basal hyphae slightly colored, nodose-septate, thin-walled, 5–6μ in diameter; basidia with 4 sterigmata; spores subglobose, concolorous with the basal hyphae, aculeate-echinulate, the body about 6μ in diameter or 5½–7½ × 5½–7μ.

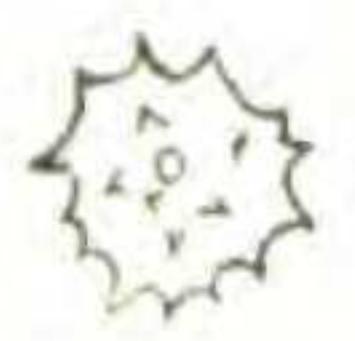

Fig. 10
H. olivascens.
Spore×640.

Fructifications sometimes in little patches 1–2 cm. long, 1½–1 cm. broad, sometimes growing more or less interruptedly over areas up to 15 cm. long, 3 cm. broad.

On very rotten wood and on bark of fallen branches of both coniferous and frondose species. New Brunswick to South Carolina. September to November. Probably common.

H. olivascens is readily distinguished from other species of *Hypochnus* by its conspicuous citrine color of some kind (flavovirens of Saccardo's 'Chromotaxia') which has been retained well by the original collection for more than sixty years. From the description, *Tomentella flavovirens* v. Hohn. & Litsch. is but slightly, if at all, different from *H. olivascens.*

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 422, under the name *Zygodesmus olivascens.*

New Brunswick: Campobello, *W. G. Farlow, 5.*

New Hampshire: Chocorua, *W. G. Farlow, 5, 6, 18.*

Vermont: Weybridge, *E. A. Burt.*

Massachusetts: Magnolia, *W. G. Farlow;* Hyde Park, *C. Bullard,* comm. by W. G. Farlow; Sharon, *A. P. D. Piguet* (in Farlow Herb.); Stony Brook, *G. R. Lyman, 167;* Williamstown, *W. G. Farlow, 7.*

New York: North Greenbush, *H. D. House,* two collections (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 14852, 20191); Karner, *H. D. House* (in N. Y. State Mus. Herb. and in Mo. Bot. Gard. Herb., 44719); Ithaca, *C. Thom,* Cornell Univ. Herb., 13582.

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 422.

Pennsylvania: Kittanning, *D. R. Sumstine.*

Maryland: Takoma Park, *C. L. Shear, 1064, 1082, 1092.*

South Carolina: Society Hill, *M. A. Curtis,* cotype (in Curtis Herb., 3204).

11. H. pilosus Burt, n. sp.

Type: in Burt Herb.

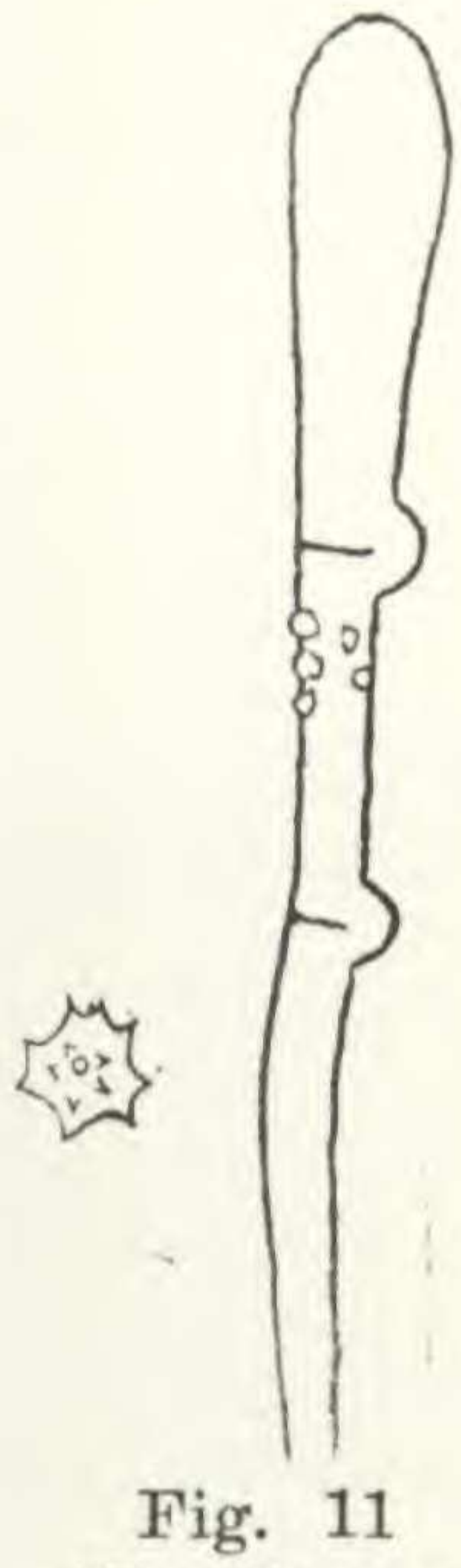

Fig. 11
H. pilosus.
Spore, cystidium×640.

Fructification effused, byssoid, membranaceous, separable from substratum, dry, tomentose, drying Sayal-brown, the margin slightly paler, thin, narrow; hymenium even in places, somewhat granular and pitted elsewhere; structure in section 200–300μ thick, composed of hyphae about 4–4½μ in diameter, branching at right angles, of the same color as the fructification, nodose-septate, rather rigid, very loosely interwoven, somewhat longitudinally interwoven next to the substratum; cystidia septate, sometimes granular incrusted, with the emergent portion colorless, thin-walled, cylindric, 5½–6μ in diameter, emerging 40–90μ, tips obtuse or clavate; spores 4 to a basidium, slightly darker than the hyphae, subglobose-angular, aculeate, the spore body 7–9 × 6μ.

Fructification 8 cm. long, 2–3 cm. broad — broken off at one end.

On bark of decaying *Quercus alba,* Lake Geneva, Wisconsin, July.

This fungus suggests *Coniophora arida* and *C. puteana* by its umber color and broadly effused fructifications, but it is a true *Hypochnus,* which is readily distinguished from other species of this genus by its color, hair-like cystidia, and the spores.

Specimens examined:
Wisconsin: Lake Geneva, *E. T. & S. A. Harper, 877.*

12. H. isabellinus Fries, Obs. Myc. **2**:281. *pl. 6. f. 3.* 1818 and 1824; Sacc. Syll. Fung. **6**:657. 1888; Bresadola, Ann. Myc. **1**:106. 1903.

Corticium isabellinum (in section *Hypochnus*) Fries, Hym. Eur. 660. 1874. — *H. argillaceus* Karsten, Soc. pro Fauna et Flora Fennica Meddel. **6**:13. 1881; Sacc. Syll. Fung. **6**: 661. 1888.

Type: there is a specimen from E. P. Fries in Curtis Herb.

Fructification effused, tomentose, thin, adnate, varying from deep olive-buff to dark olive-buff, the margin thinner, concolorous; in structure 60–200μ, rarely 300μ, thick, with a few hyphae 8–10μ, or more, in diameter, running along the substratum and sending out suberect, loosely interwoven branches; hyphae concolorous with the fructification, branching at right angles, thick-walled, not nodose-septate; basidia with 4 sterigmata; spores concolorous, globose, echinulate, the spore body 7–9μ in diameter.

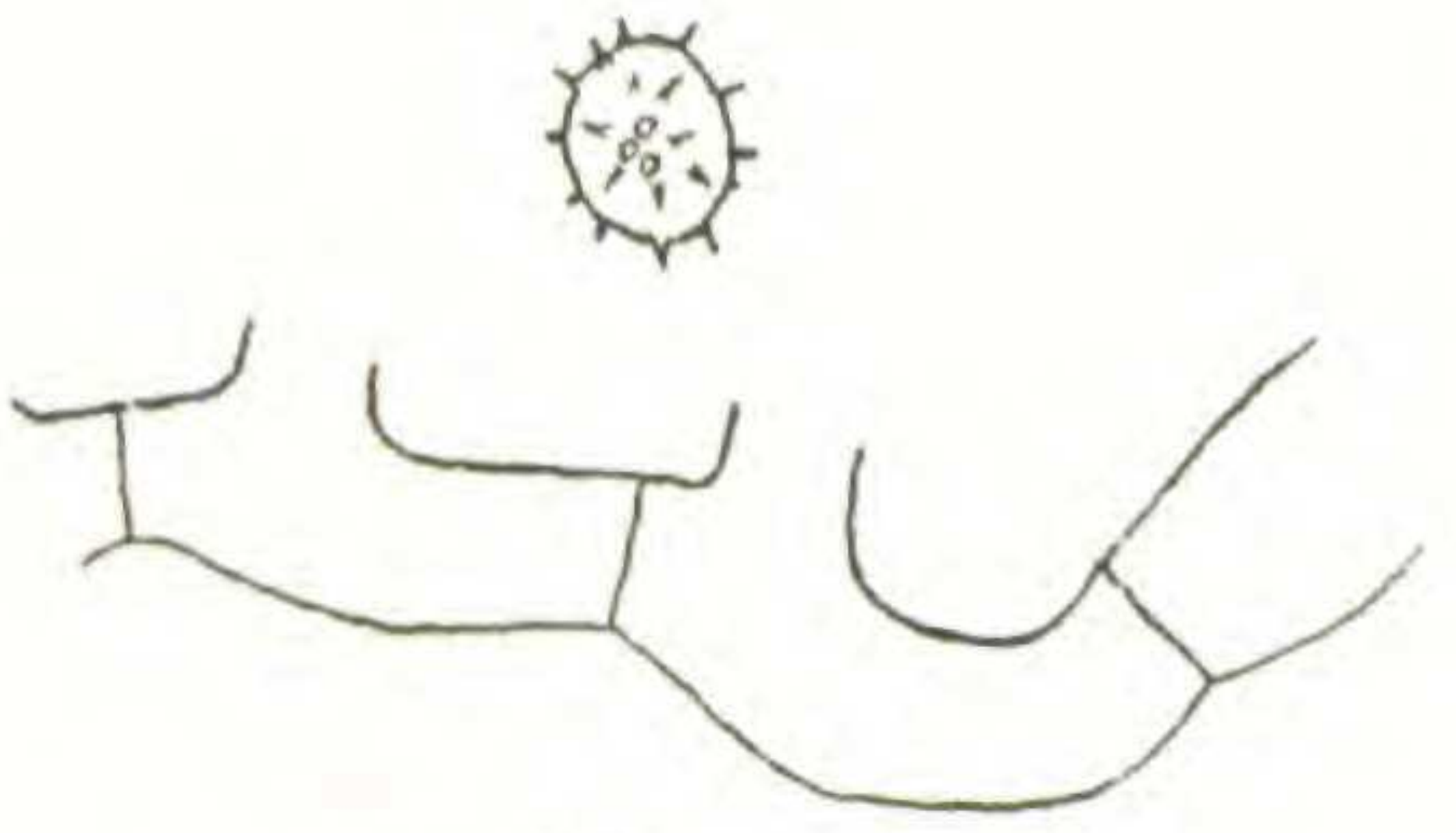

Fig. 12
H. isabellinus.
Spore, hypha×640.

Fructification 5–10 cm. long, 1½–3 cm. broad, and probably larger.

On rotten wood and bark of both coniferous and frondose species. Canada to Florida, in Wisconsin and in Jamaica. May to January. Probably common.

H. isabellinus is a little thinner and a little paler than *H. pannosus,* and not separable from the substratum in the collections which I have studied. It is best distinguished from the latter species by the larger hyphae of *H. isabellinus* and lack of clamp connections.

Specimens examined:

Exsiccati: Ravenel, Fungi Am., 57b, under the name *Zygodesmus pannosus;* Thümen, Myc. Univ., 2275, under the name *Zygodesmus pannosus.*

Sweden: Upsala, Halmbyboda, from E. P. Fries (in Curtis Herb.); Stockholm, *L. Romell, 219–222;* Femsjö, *L. Romell, 223,* and *E. Fries* (in Herb. Fries under the manuscript name *Hypochnus leprosus*).

Canada: Rockcliffe Park, *J. Macoun, 144;* St. Lawrence Valley, *J. Macoun, 2.*

New Hampshire: Chocorua, *W. G. Farlow,* two collections.

New Jersey: Newfield, *J. B. Ellis,* in Thümen, Myc. Univ., 2275.

Florida: Gainesville, *H. W. Ravenel,* in Ravenel, Fungi Am., 57b.

Wisconsin: New London, *E. T. & S. A. Harper, 949;* Stevens Point, *C. J. Humphrey, 1948* (in Mo. Bot. Gard. Herb., 4748).

Jamaica: Cinchona, *W. A. & Edna L. Murrill,* N. Y. Bot. Gard., Fungi of Jamaica, 630.

13. H. pannosus (Berk. & Curtis) Burt, n. comb.

Zygodesmus pannosus Berk. & Curtis, Grevillea **3**:112. 1875.

Type: cotype in Curtis Herb.

Fructification effused, byssoid-membranaceous, separable when well developed, tomentose, varying in brown from Saccardo's umber and snuff-brown to cinnamon-brown, the margin concolorous and thinning out; in structure 120–350μ thick, with an occasional hypha running along the substratum but composed for the most part of suberect, branching, loosely interwoven, nodose-septate, thick-walled hyphae concolorous with the fructification, 4–6μ in diameter; basidia with 4 sterigmata; spores concolorous with the fructification, subglobose, sometimes flattened on one side, echinulate, the body 6–8 × 5–7μ.

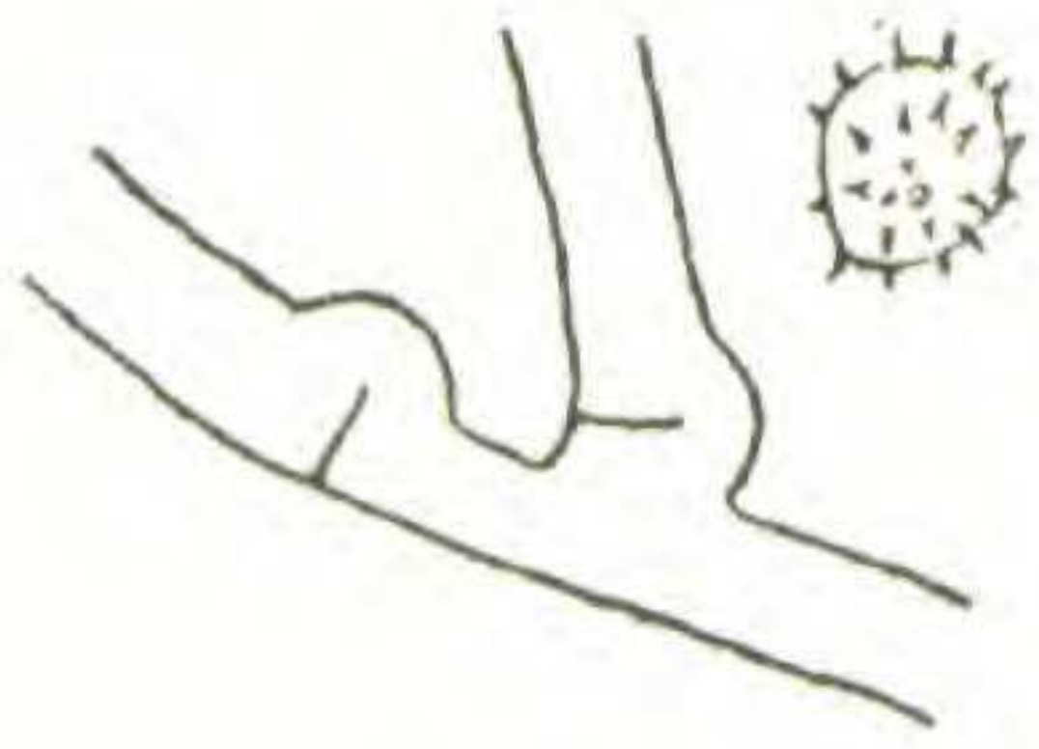

Fig. 13
H. pannosus.
Spore, hypha ×640.

Fructification 3–6 cm. long, 1½–3 cm. broad.

On rotten wood and bark, usually of frondose species, and on the ground in woods. Canada to Louisiana; occurs in Europe also. September to December. Probably common.

H. pannosus and *H. isabellinus* are species of brown color approaching clay-color, and of cottony surface, which cannot be distinguished from each other with certainty except by microscopic characters. Well-developed fructifications of *H. pannosus* are thicker than those of *H. isabellinus* but thin fructifications of the former are frequently collected. *H. pannosus* has nodose-septate hyphae 4–6μ in diameter, while the hyphae of *H. isabellinus* are not nodose-septate and next to the substratum are 8–10μ, or more, in diameter, and occasionally 15μ in diameter. KHO solution produces no noteworthy color change. The collection from Washington, referred with doubt to this species, has the spores with body 6 × 4½μ, aculeate with scattered, very short points.

Specimens examined:

Sweden: Stockholm, *L. Romell, 225;* Femsjö, *L. Romell, 228.*
Canada: Quebec, Ironsides, *J. Macoun, 277a.*
New Hampshire: Chocorua, *W. G. Farlow, 7, 8,* and *an unnumbered specimen;* Shelburne, *W. G. Farlow, 1.*
Vermont: Middlebury, *E. A. Burt.*
Massachusetts: Magnolia, *W. G. Farlow, c;* Williamstown, *W. G. Farlow, 5.*
South Carolina: Santee Canal, *Ravenel, 1117,* cotype (in Curtis Herb., 3007).
Louisiana: St. Martinville, *A. B. Langlois, cs.*

?Washington: Bingen, on *Pinus ponderosa, W. N. Suksdorf, 860.*

14. H. avellaneus Burt, n. sp.

Type: in Burt Herb.

Fructification effused, soft, membranaceous, separable, upper side between cartridge-buff and olive-buff and under side fuscous, the margin narrow, radiate, colored like the upper surface or whitish; in structure 300–400μ thick, with the hyphae snuff-brown under the microscope, thick-walled, nodose-septate, rather compactly interwoven; basidia 4-spored; spores concolorous with the hyphae, angular-subglobose, aculeate, the body 6–7½ × 6μ.

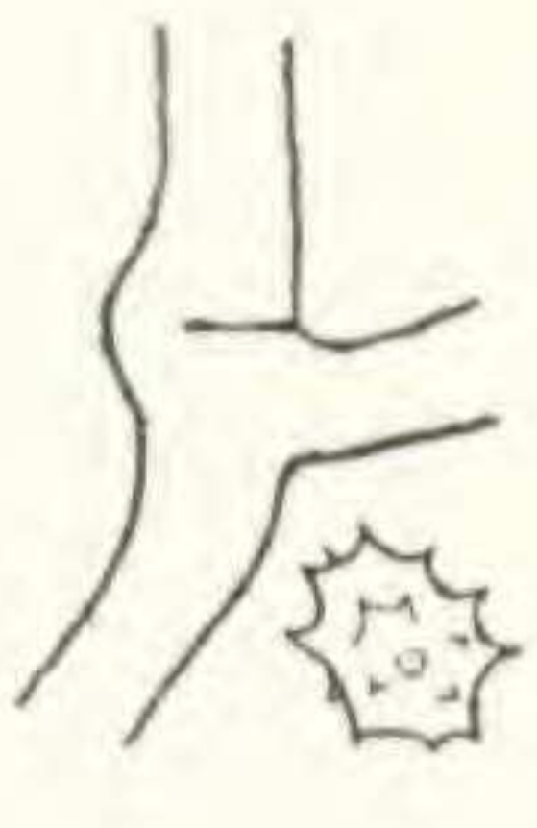

Fig. 14
H. avellaneus.
Hypha, spore × 640.

Fructification 5 cm. long, 1 cm. broad.

On wood of red fir in woods. Washington. October.

This species is marked by the pale color (nearly avellaneus of Saccardo's 'Chromotaxia') of the upper surface and margin and the fuscous subiculum.

Specimens examined:

Washington: Olympia, *C. J. Humphrey, 6305,* type.

15. H. sparsus Burt, n. sp.

Type: in Farlow Herb. and in Burt Herb.

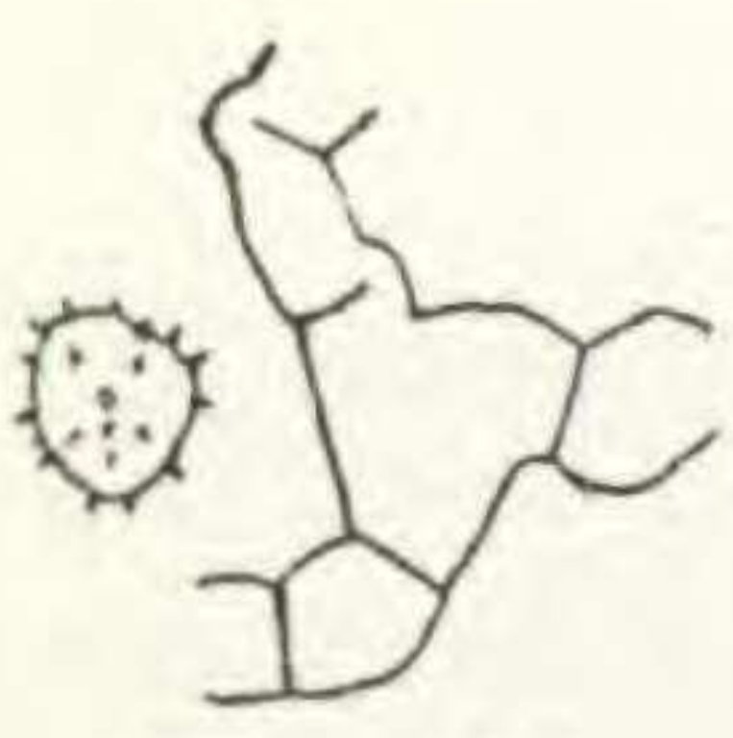

Fig. 15
H. sparsus.
Spore, hypha ×640.

Fructification effused, very thin, byssoid, not forming a membrane, adnate, drab, the margin of the same color, indeterminate; in structure 60–75μ thick, with the hyphae hyaline under the microscope, short-celled, irregular in form and diameter, nodose-septate; basidia 4-spored; spores grayish olive under the microscope, echinulate, 6–7 × 6μ; no noteworthy color change by KHO solution.

Fructification 2–3 cm. long, 1–2 cm. broad.

On bark of fallen frondose limbs. New Hampshire. August.

When better known from other collections, *H. sparsus* may prove to be *H. pannosus* very sparsely developed. At present it appears distinct from the latter by its adnate, very thin fructification and short-celled, hyaline hyphae of irregular form and mode of branching.

Specimens examined:

New Hampshire: Madison, *W. G. Farlow, 15,* type; Chocorua, *W. G. Farlow, 16.*

16. **H. epigaeus** Burt, n. sp.

Type: in Farlow Herb. and in Burt Herb.

Fructification effused, soft, felty-membranaceous, tomentose, light mineral-gray, the margin thinning out and indeterminate; in structure 400μ thick, with hyphae hyaline, 4μ in diameter, thick-walled, nodose-septate, densely interwoven for 100μ next the substratum and then suberect and ascending side by side to the hymenium; basidia with 4 sterigmata; spores hyaline to deep olive-buff under the microscope, angular-globose, rough-walled or aculeate with very short points; spore body 6–7μ in diameter.

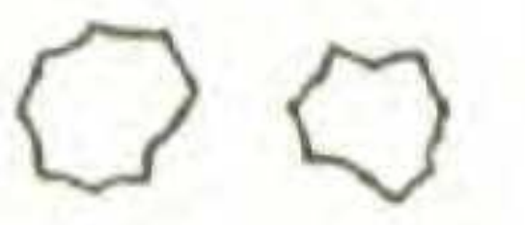

Fig. 16
H. epigaeus.
Spores×640.

Fructification about 2 cm. in diameter.

Running over ground among small mosses. Massachusetts. August.

This species is marked by its color, two-layered fructification, thick-walled and hyaline hyphae, and spores hardly more than rough-walled. *H. cinerascens* occurs on wood, is drab-gray, and has very thin-walled and delicate, loosely arranged hyphae 2–3μ in diameter, and smaller spores than *H. epigaeus. H. chalybeus,* as received from Bresadola, is pale at the surface only and has colored hyphae constituting the greater part of the fructification.

Specimens examined:

Massachusetts: Manchester, *W. G. Farlow, 2,* type.

17. **H. botryoides** (Schw.) Burt, n. comb.

Thelephora botryoides Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**:109. 1822. — *T. olivacea* β *T. botryoides* Fries, Elenchus Fung. **1**:198. 1828; Schweinitz, Am. Phil. Soc. Trans. N. S. **4**:168. 1834; Fries, Epicr. 543. 1838. — *T.*

granosa Berk. & Curtis, Grevillea **1**:149. 1873; Sacc. Syll. Fung. **6**:546. 1888. — *Hypochnus granosus* (Berk. & Curtis) Bresadola, Ann. Myc. **1**:108. 1903. — *Zygodesmus bicolor* Cooke & Ellis, Grevillea **7**:6. 1878.

Type: in Herb. Schweinitz.

Fructification effused, membranaceous, separable, drying Chaetura-drab to fuscous, the margin much paler, brownish and floccose; hymenium distinctly and closely granular; in section 300–400μ thick, with hyphae 3–4μ in diameter, nodose-septate, somewhat colored, thin-walled, a few running along the substratum, or forming rope-like strands, and sending out suberect, loosely interwoven branches which form the greater part of the fructification; KHO solution causes an immediate change of color in the tissue of the granules to between blue-green and sage-green when added to bits of the fructification in microscopic preparations; spores concolorous with the fructification, angular-subglobose, aculeate, the spore body 5–6 × 4–5μ.

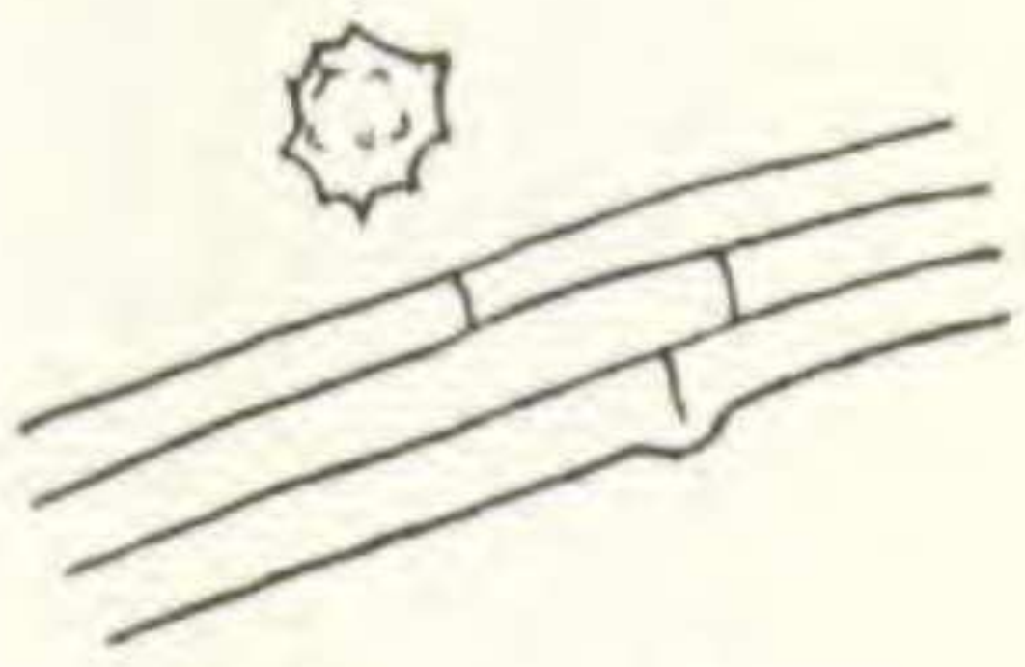
Fig. 17
H. botryoides.
Spore, hyphal strand×640.

Fructifications 1–5 cm. long, 1–4 cm. broad.

On rotten wood, both coniferous and frondose. New Hampshire to South Carolina and Alabama. August to January.

The fuscous color of the central portion of the fructification, paler margin, and occurrence of granules about 4 to the mm. afford a good combination of characters for the recognition of *H. botryoides* by microscopic characters. Occasionally a fructification may vary towards Mars-brown. The blue-green color produced in the granules in microscopic preparations by adding KHO solution is a good positive character for this species, but is merely temporary.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 420, under the name *Zygodesmus bicolor* C. & E.

New Hampshire: Chocorua, *W. G. Farlow, 12,* and also a collection of Sept., 1915 (in Farlow Herb. and in Mo. Bot. Gard. Herb., 8930).

Vermont: Middlebury, *E. A. Burt,* two collections.

New York: Helderberg Mountains, *C. H. Peck* (in Coll. N. Y. State, under the name *Zygodesmus bicolor* C. & E.).

New Jersey: Belleplain, *C. L. Shear, 1253;* Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 420.

Pennsylvania: Bethlehem, *Schweinitz* (in Herb. Schweinitz, as the *Thelephora umbrina* of Schweinitz, Syn. N. Am. Fungi, No. 578).

Maryland: Takoma Park, *C. L. Shear, 1061, 1085.*

North Carolina: *Schweinitz,* type (in Herb. Schweinitz).

South Carolina: *M. A. Curtis, 2485, 3700,* types of *Thelephora granosa* (in Kew Herb.).

Alabama: *Peters,* type of *T. granosa* (in Kew Herb.).

18. **H. coriarius** (Peck) Burt, n. comb.

Grandinia coriaria Peck, Buffalo Soc. Nat. Hist. Bul. **1**:61. 1873; N. Y. State Mus. Rept. **26**:71. 1874. — *Hypochnus fulvo-cinctus* Bresadola, I. R. Accad. Agiati Atti III. **3**:116. 1897; Sacc. Syll. Fung. **14**:227. 1900.

Type: in Coll. N. Y. State.

Fructification effused, tomentose, membranaceous, separable from the substratum, under side and margin ochraceous-tawny, upper side and minute crowded granules brownish olive; in structure 200–350μ thick, composed of closely arranged, somewhat interwoven, colored, thin-walled, occasionally nodose-septate, hyphae $2\frac{1}{2}\mu$ in diameter, forming occasional rope-like strands next to the substratum; basidia with 4 sterigmata; spores darker colored than the hyphae, subglobose-angular, aculeate, the body 5–6μ in diameter; KHO solution usually becomes dark colored next to the sections and changes the hymenial layer to sage-green.

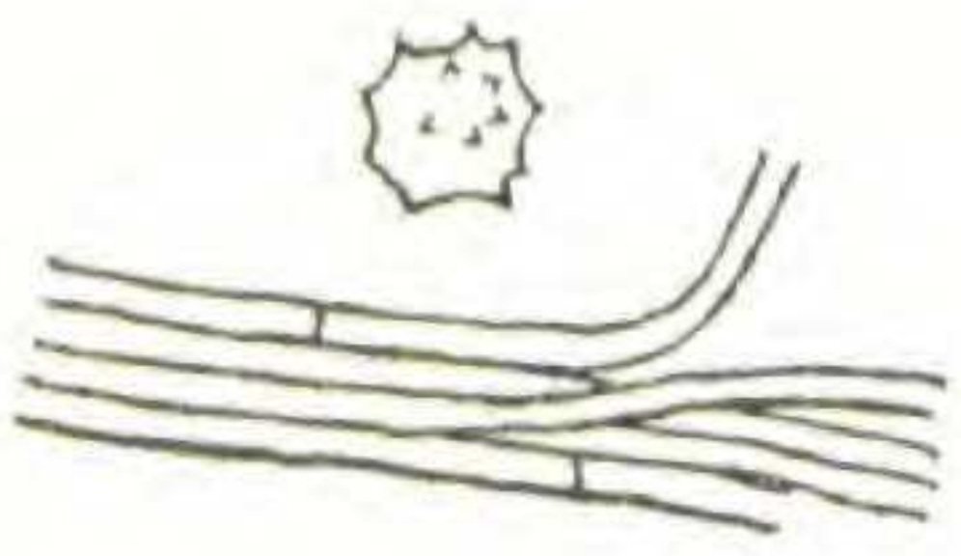
Fig. 18
H. coriarius.
Spore, hyphal strand×640.

Fructifications about 3–10 cm. long, $1\frac{1}{2}$–4 cm. broad.

On rotten wood, noted also on old leather and thallus of *Peltigera aphthosa.* Vermont to South Carolina and westward to Wisconsin. August to November.

This species is related to *H. botryoides* but may be distinguished from it by the more olivaceous color of the granular region and brighter and more intensely colored margin and side next to substratum, and the rope-like hyphal strands next to substratum. The sage-green color given to hymenial tissue by KHO solution is a helpful determinative character in most cases; however, I have two collections which fail to give it. *H. coriarius* occurs in Herb. Schweinitz under the name *Thelephora punicea* Alb. & Schw. The specimen is the No. 676 of Schweinitz, 'Syn. N. Am. Fungi'; it does not agree well with the original description of Albertini and Schweinitz and is not what European mycologists now understand as *Thelephora* (*Hypochnus*) *punicea.*

Specimens examined:

Hungary: *A. Kmet,* type of *H. fulvo-cinctus* (in Bresadola Herb.).

Vermont: Lake Dunmore, *W. G. Farlow* (in Farlow Herb.); Middlebury, *E. A. Burt,* three collections.

New York: Greenbush, *C. H. Peck,* type (in Coll. N. Y. State).

Pennsylvania: Kittanning, *D. R. Sumstine;* Bethlehem, *Schweinitz* (in Herb. Schweinitz, under the name *Thelephora punicea*).

South Carolina: Gourdin, *C. J. Humphrey, 3281* (in Mo. Bot. Gard. Herb., 43118).

Ohio: *C. G. Lloyd, 3882, 4199.*

Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 870.*

19. H. bicolor Atkinson & Burt, n. sp.

Type: in Burt Herb. and in Cornell Univ. Herb.

Fructification effused, membranaceous, separable, dry, central portion at the surface olive-ocher, underneath brownish drab and extended laterally as a brownish drab margin 1–5 mm. broad; structure in section about 400μ thick, (1) with the hyphae next the substratum slightly colored, thin-walled, lax, long-celled, nodose-septate, 3μ in diameter, either loosely interwoven or with some hyphae consolidated together into

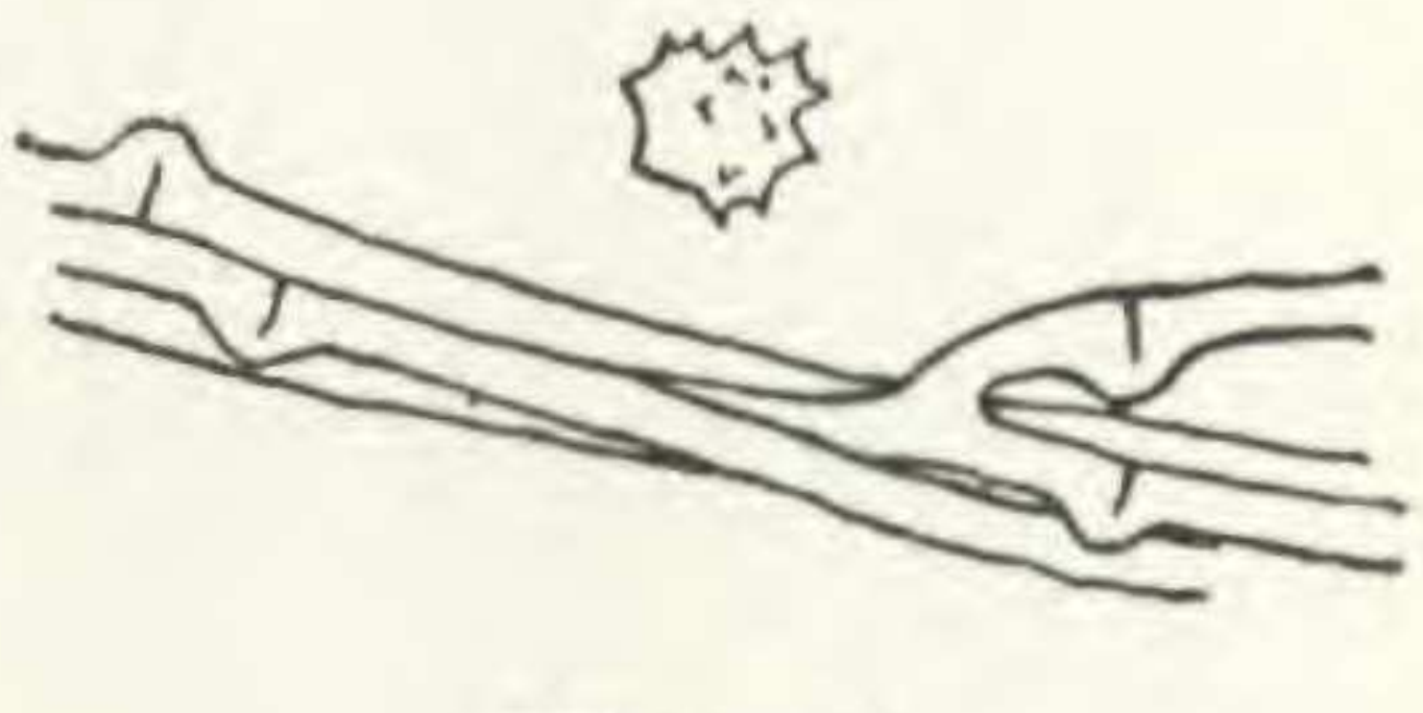

Fig. 19
H. bicolor.
Spore, hypha×640.

strands 6–15μ in diameter, and (2) with hyphae in the subhymenial region densely interwoven; no cystidia; basidia with spores on 4 slender sterigmata; spores olive-ocher, angular-subglobose, aculeate, the spore body 5–6 × 4½–6μ; KHO solution changes the color of both the olive-ocher and the brownish drab hyphae to sage-green, later olive-gray.

Fructification 2 cm. long, 1¼ cm. broad, with the fertile, olive-ocher portion 5–10 mm. in diameter.

On dead wood in woods. New York. August.

The single collection of this species which has been found is conspicuous by its bright olive-ocher hymenial portion surrounded by a brownish drab margin. Both of these colors are destroyed when potassium hydrate solution is brought in contact with sections of the fructification in making microscopic preparations, and the hyphae become at once sage-green, later olive-gray.

Specimens examined:

New York: Cascadilla Wood, Ithaca, *C. J. Humphrey,* comm. by G. F. Atkinson, Cornell Univ. Herb., 22571.

20. H. atroruber (Peck) Burt, n. comb.

Zygodesmus atroruber Peck, Bot. Gaz. **6**:277. 1881.

Type: in Coll. N. Y. State.

Fructification effused, membranaceous, separable, tomentose, with central portion granular and between walnut-brown and Vandyke-brown, the margin often conspicuously umber or Isabella-color (melleus of Saccardo's 'Chromotaxia'); structure in section 300–500μ thick, composed of loosely interwoven thick-walled, nodose-septate hyphae 5–6μ in diameter, concolorous with the fructification and connected with a few rope-like mycelial strands 12–20μ in diameter, which run along the substratum; basidia with 4 sterigmata; spores concolorous with the darker hyphae, subglobose, often flattened on one side, echinulate, the body 6–7 × 5–6μ.

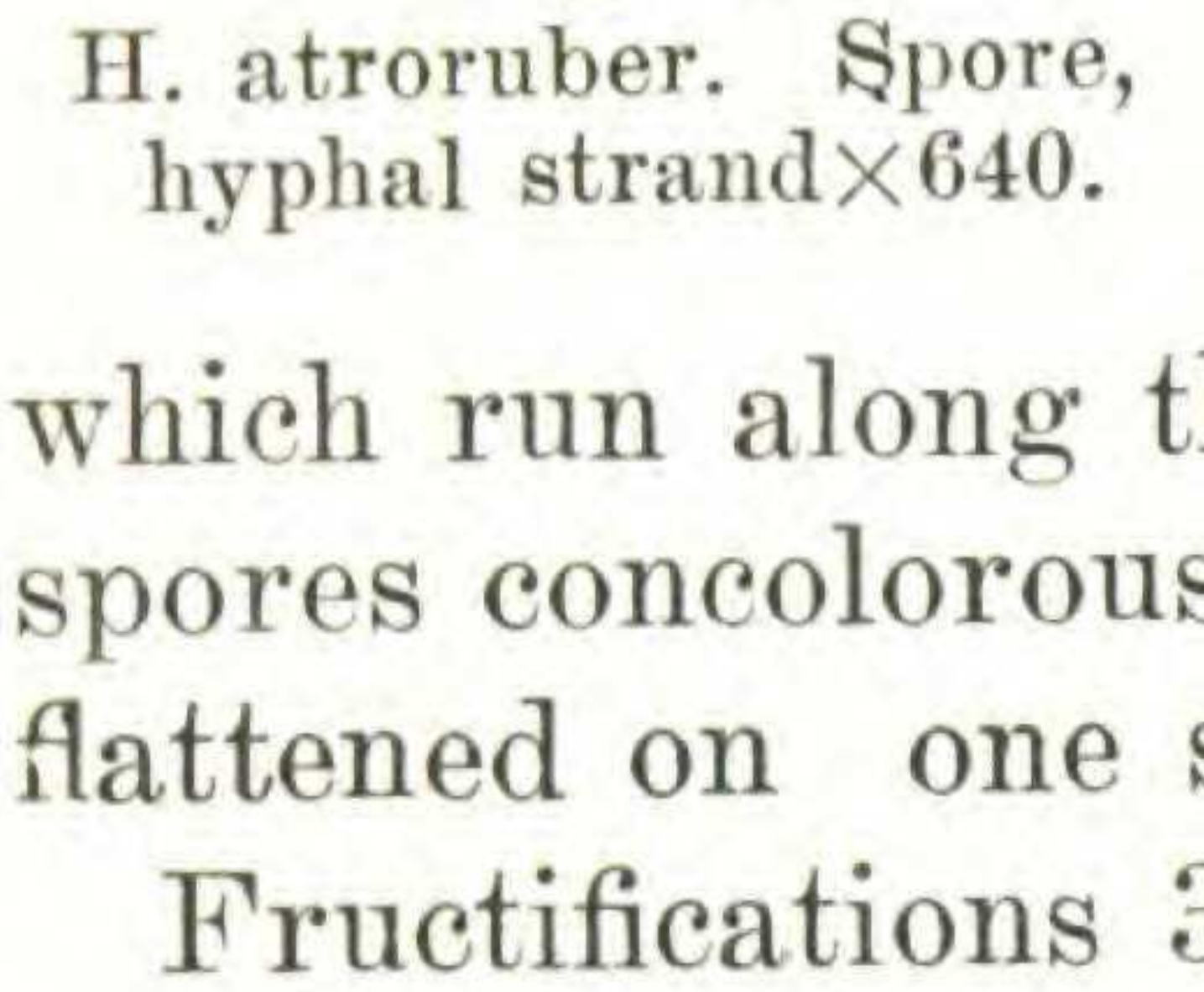

Fig. 20
H. atroruber. Spore, hyphal strand×640.

Fructifications 3–6 cm. long, 1–3 cm. broad.

On decaying wood. New Hampshire to Maryland. September to January. Probably frequent.

H. atroruber is one of our finest species of the genus. It is conspicuous by the dark red central region bordered by a melleus (in the sense of 'Chromotaxia') margin. This margin was not noticed by Peck in the original description but is present on one side of his type. Specimens of *H. atroruber* lacking the characteristic melleus margin may be distinguished from *H. rubiginosus* by the coarser, darker-colored, thicker-walled hyphae of the former species.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 1390, under the name *Zygodesmus atroruber* Pk.

New Hampshire: Chocorua, *W. G. Farlow, 10*, and collection of Sept., 1915 (in Farlow Herb. and in Mo. Bot. Gard. Herb., 8931).

Massachusetts: Mt. Tom, *H. W. Harkness,* type of *Zygodesmus atroruber* Pk. (in Coll. N. Y. State); Magnolia, *W. G. Farlow, b;* Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow, 21.

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 1390.

Maryland: Takoma Park, *C. L. Shear, 902, 1086.*

21. H. subvinosus Burt, n. sp.

Type: in Burt Herb.

Fructification effused, thin, adnate, becoming granular, tomentose, vinaceous-brown, but becoming Rood's brown in the herbarium; in structure 250–300μ thick, composed of suberect, branching, loosely interwoven, thin-walled hyphae 4–5μ in diameter, not nodose-septate, colored near the substratum and hyaline near the basidia; basidia with 4 sessile spores; spores umber, angular-subglobose, aculeate, the body 5–6μ in diameter, or 5–6 × 4–5μ; no noteworthy color change by KHO solution.

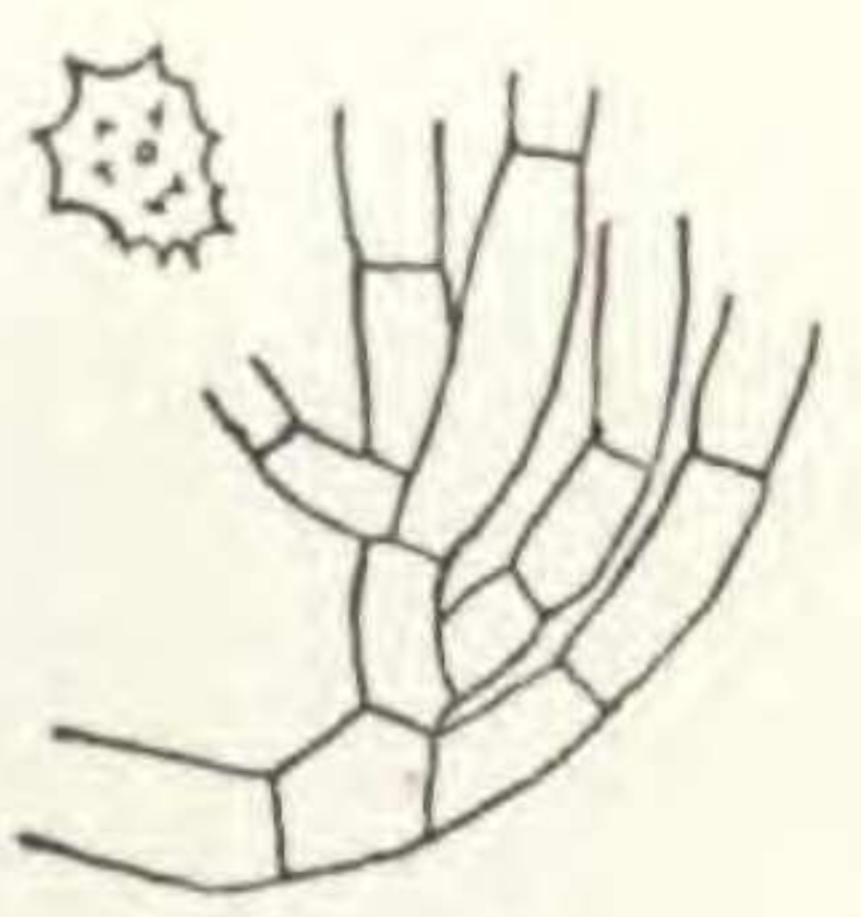

Fig. 21
H. subvinosus.
Spore, hypha×640.

Fructification 4 cm. long, $2\frac{1}{2}$ cm. broad.

On bark of rotting frondose wood and on ground. New Hampshire to New Jersey. November. Rare.

The adnate habit, vinaceous-brown color of the fructifications, and the colored hyphae which are not nodose-septate, are the distinctive characters of *H. subvinosus.*

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow, 3;* Intervale, *R. Thaxter, 11* (in Farlow Herb. and in Mo. Bot. Gard. Herb., 43930).

Massachusetts: Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43914).

New Jersey: Belleplain, *C. L. Shear, 1251,* type.

22. H. cervinus Burt, n. sp.

Type: in Burt Herb.

Fructifications in very small, interrupted, circular patches, becoming sometimes confluent and effused, byssoid, thin, not separable, fawn-color, with the under side and margin whitish; in structure 75–100μ thick, consisting of loosely interwoven, rather suberect, thin-walled hyphae $2\frac{1}{2}$–3μ in diameter, nodose-septate, hyaline under the microscope; basidia with 4 sterigmata; spores slightly colored, subglobose, short aculeate, the body 5–6μ in diameter, or $6 \times 5\mu$.

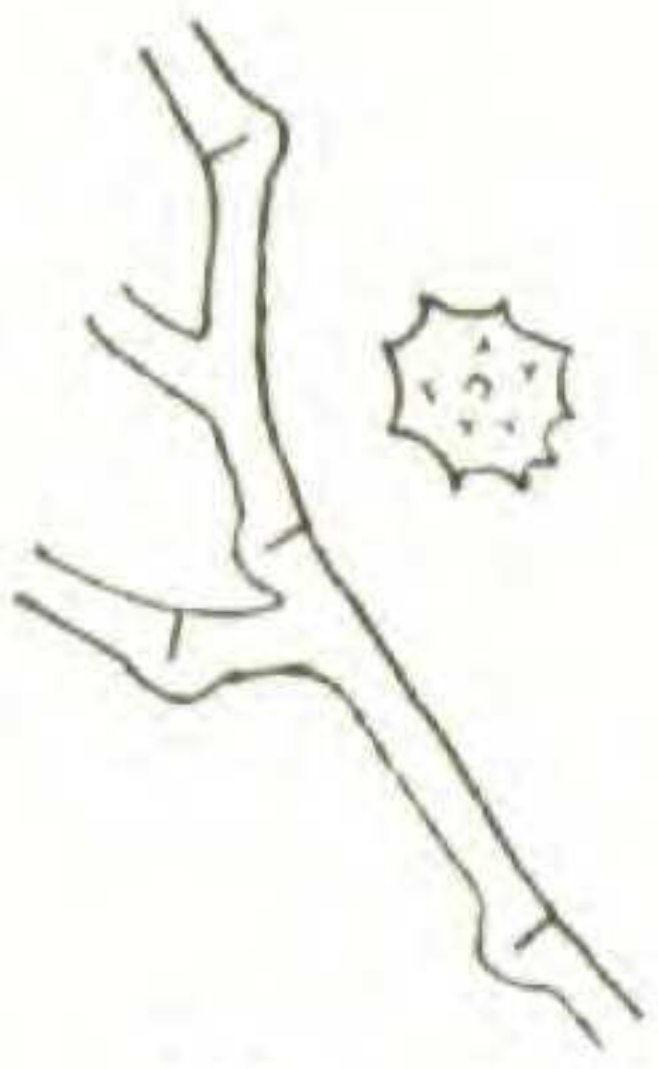

Fig. 22
H. cervinus.
Hypha, spore
×640.

Fructifications 2–5 mm. in diameter, more or less confluent over an area 2 cm. long, 1 cm. broad.

On bark of dead *Acer macrophyllum* lying on the ground. Washington. November 1.

In the only collection which has been made, *H. cervinus* is characterized by its occurrence in very small, thin fructifications, not separable from substratum, fawn-color at the center with a whitish margin, and by having hyaline, nodose-septate hyphae. *H. cinerascens* is of different color, thicker, and separable from the substratum.

Specimens examined:

Washington: W. Klickitat County, *W. N. Suksdorf, 847,* type.

23. H. fuligineus Burt, n. sp.

Type: in Burt Herb. and in Farlow Herb.

Fructification effused, soft, felty-membranaceous, separable, upper surface pinkish buff to Isabella-color, under side and margin bister; in structure 200–1200μ thick, with hyphae bister under the microscope, thick-walled, nodose-septate, 5–7μ in diameter, a few running next to and parallel with the substratum and giving off suberect, loosely interwoven branches of the same color, 3½–4½μ in diameter; basidia with 4 sterigmata; spores bister under the microscope, globose or subglobose, echinulate, the body 6–7μ in diameter, or 6–9 × 6–7μ; no color change by KHO solution.

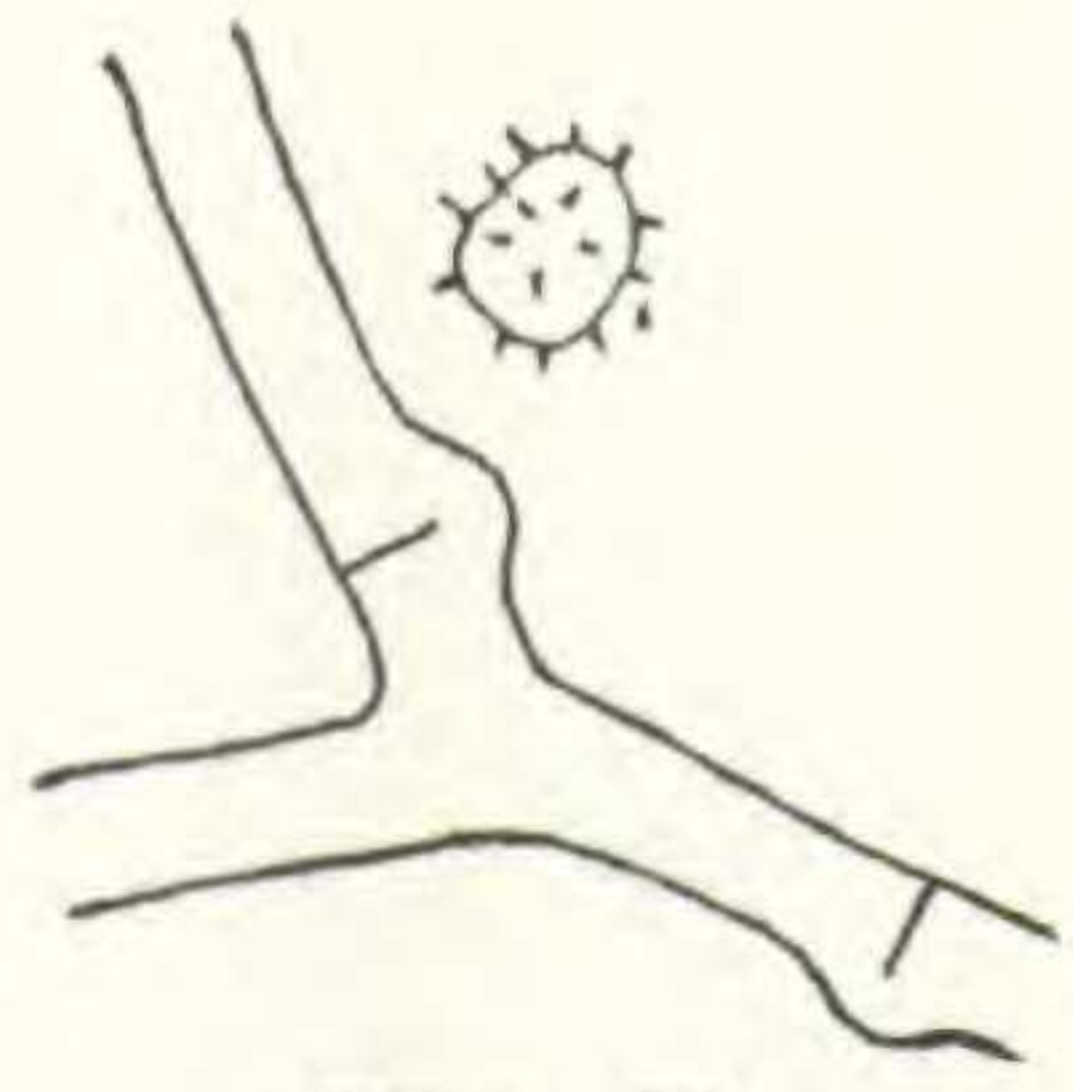

Fig. 23
H. fuligineus.
Hypha, spore×640.

Fructification 4–10 cm. long, 2–4 cm. broad.

On rotten frondose wood. New England and Wisconsin. August and September.

H. fuligineus is much thicker, firmer, and more spongy than *H. atroruber* and *H. cinerascens,* and differs from them further in coloration and in hyphal characters. In its thick spongy structure and microscopic details it suggests *H. spongiosus* to such a degree that I have been disposed to regard *H. fuligineus* as a subspecies of *H. spongiosus* but this seems precluded by the importance of color characters in *Hypochnus.*

Specimens examined:

New Hampshire: Chocorua, *W. G. Farlow, 4,* type.
Vermont: Middlebury, *E. A. Burt.*
Massachusetts: Magnolia, *W. G. Farlow, d,* and *an unnumbered collection* of 1903.
Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 878.*

24. H. cinerascens Karsten, Soc. pro Fauna et Flora Fennica Meddel. **16**:2. 1888; Finl. Basidsv. 441. 1889; Sacc. Syll. Fung. **9**:244. 1891; Bresadola, Ann. Myc. **1**:108. 1903.

Tomentella cinerascens (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**:1570. 1906.

Type: authentic specimen in Burt Herb.

Fructification effused, byssoid, membranaceous, separable, drab-gray, the margin the same color or whitish; in structure 200–350μ thick, with the hyphae hyaline under the microscope, thin-walled, nodose-septate, loosely interwoven; basidia with 4 sterigmata; spores drab-gray in a spore collection, globose, echinulate, the body 4½–5½μ in diameter.

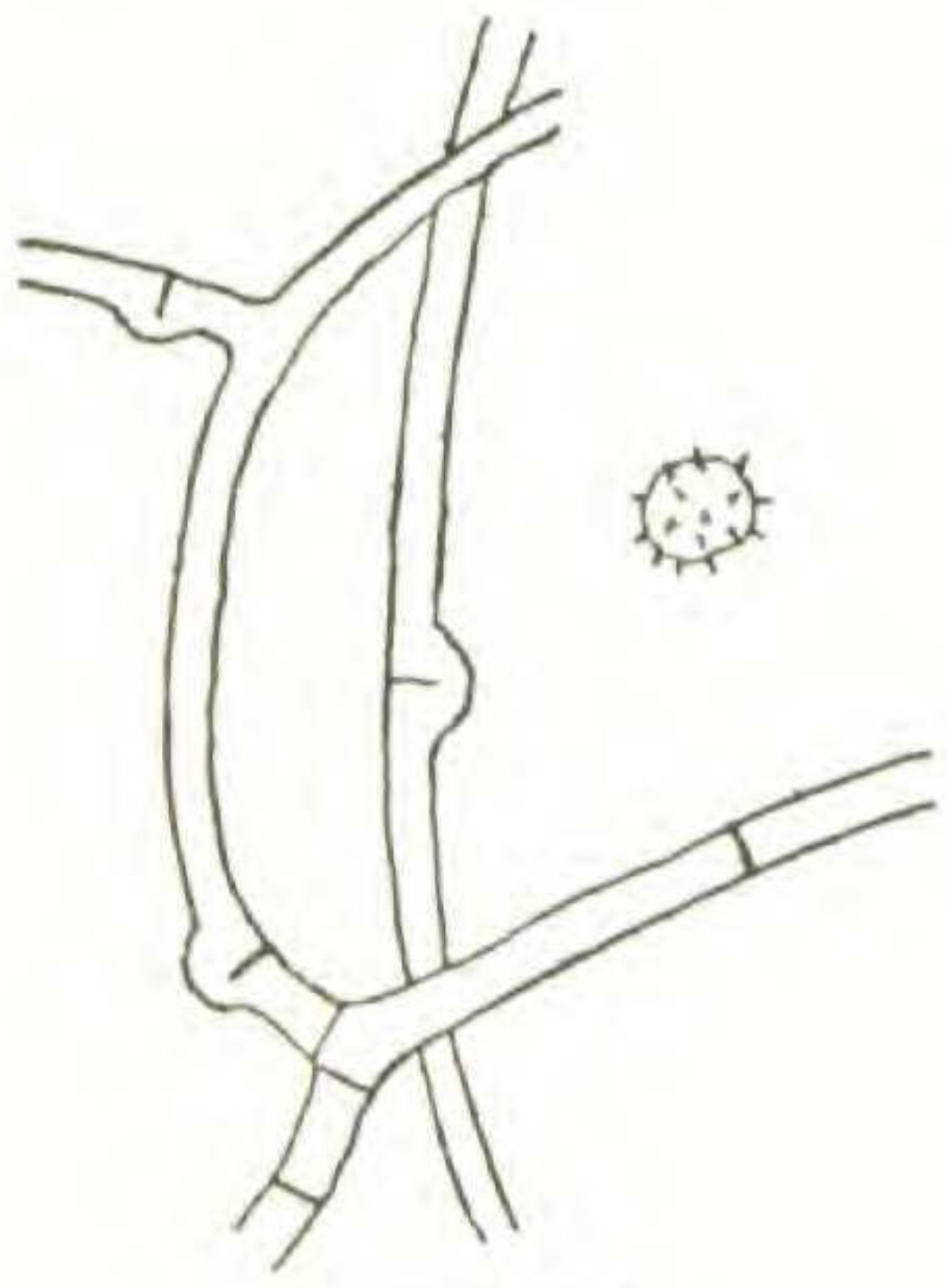

Fig. 24
H. cinerascens.
Hyphae, spore × 640.

Fructification 2–3 cm. long, 1–1½ cm. broad.

On bark of *Alnus*. New Hampshire and Montana. September.

This species is distinguished from *H. epigaeus* by drab-gray color, fructification easily separable from substratum, occurrence on wood, smaller and echinulate spores, and hyphae of smaller diameter and more uniformly interwoven.

Specimens examined:

Finland: Mustiala, *P. A. Karsten.*

New Hampshire: Chocorua, *W. G. Farlow, 17.*

Montana: Missoula, *J. R. Weir, 440* (in Mo. Bot. Gard. Herb., 22144).

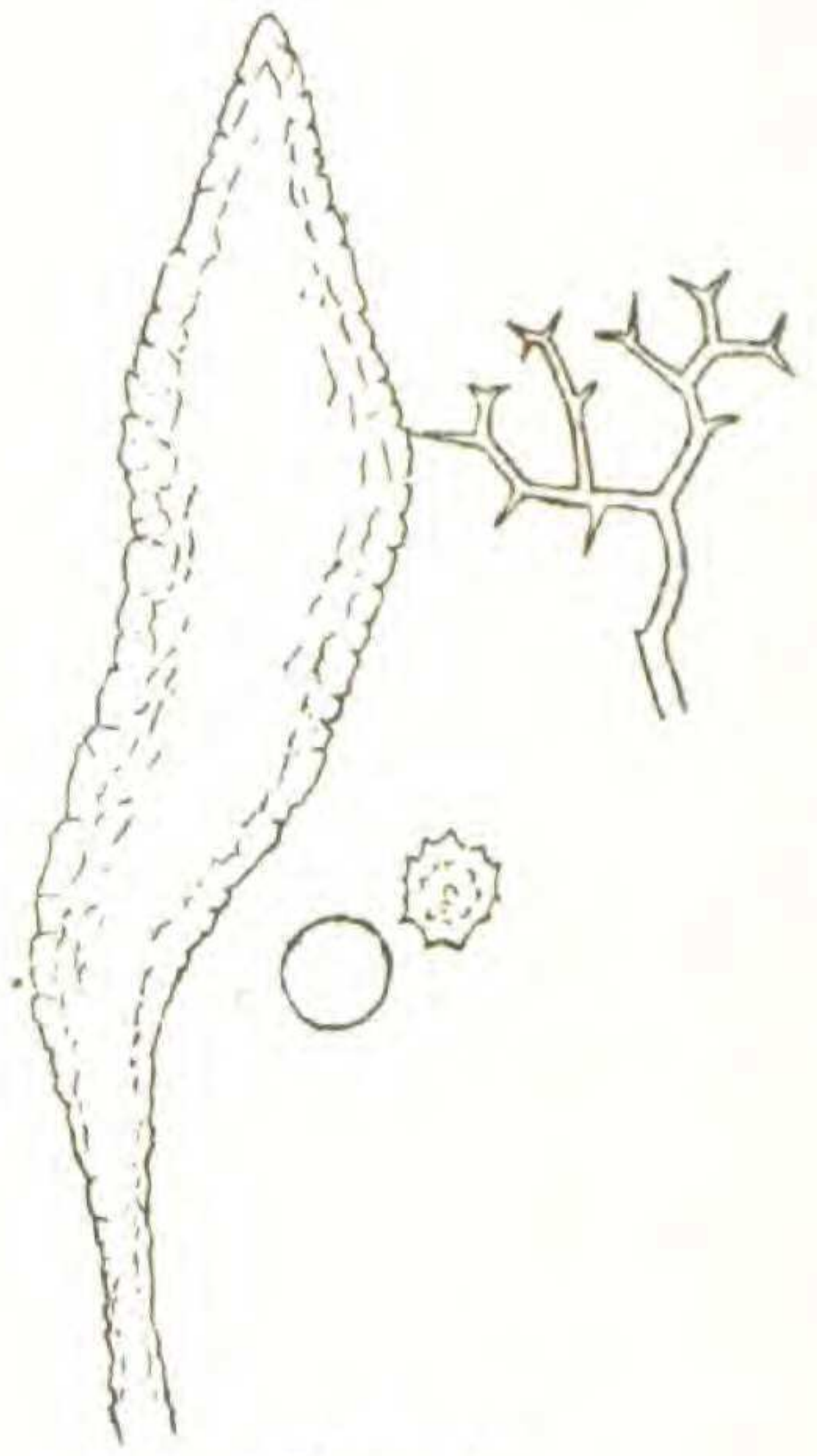

Fig. 25
H. peniophoroides.
Cystidium, antler-shaped organ, spores × 640.

25. H. peniophoroides Burt, n. sp.

Type: in Burt Herb. and in N. Y. Bot. Gard. Herb.

Fructification long and widely effused, coriaceous, compact, adnate, glabrous, pinkish buff, the margin entire, determinate; in structure 300–400μ thick, stratose, composed of fine interwoven hyphae and numerous cystidia; hyphae concolorous with the fructification, 1½μ in diameter, not nodose-septate, densely interwoven, dichotomously branched, and with antler-shaped hyphal branches especially noticeable at the surface of the hymenium; cystidia very numerous in all regions of fructification, cylindric, acute, 36–

60 × 12μ, emerging up to 25μ; basidia with 4 sterigmata; spores globose, becoming pinkish buff and tuberculate, the body 6μ in diameter.

Fructification more than 7 cm. long, more than 4 cm. broad.

On bark of rotten frondose wood in woods. Louisiana and Jamaica. September to November.

This species is included in *Hypochnus* on account of its mature spores, whose tubercules are short and small. The immature spores are hyaline and even; hence immature specimens of this species are likely to be referred to *Peniophora.* The presence in the hymenium of dichotomously branched, antler-shaped, hyphal branches such as are present in *Corticium investiens* and *Grandinia granulosa* is a unique character which I have not observed in any species of *Peniophora* and which should make possible identification of immature specimens. In habit, *H. peniophoroides* resembles *Corticium portentosum* and *Thelephora pallescens* Schw.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois, v.*

Jamaica: Mooretown, *F. S. Earle,* type, N. Y. Bot. Gard., Plants of Jamaica, 540.

26. H. thelephoroides (Ell. & Ev.) Burt, n. comb.

Corticium thelephoroides Ellis & Everhart, Jour. Myc. **1**:88. 1885; Sacc. Syll. Fung. **6**:630. 1888.

Type: in N. Y. Bot. Gard. Herb., and portions in Kew Herb., Farlow Herb., and Mo. Bot. Gard. Herb.

Fructification effused, adnate, thick, compact, at first pale olive-buff, becoming warm buff in the herbarium, the under side and very narrow margin Saccardo's umber; in structure 150–1200μ thick, with (1) a densely interwoven layer about 60μ thick next to substratum and (2) with a hymenial layer composed of hyphae, antler-shaped hyphal branches, and numerous imbedded, concolorous spores; hyphae thick-walled, not nodose-septate, 1½–2μ

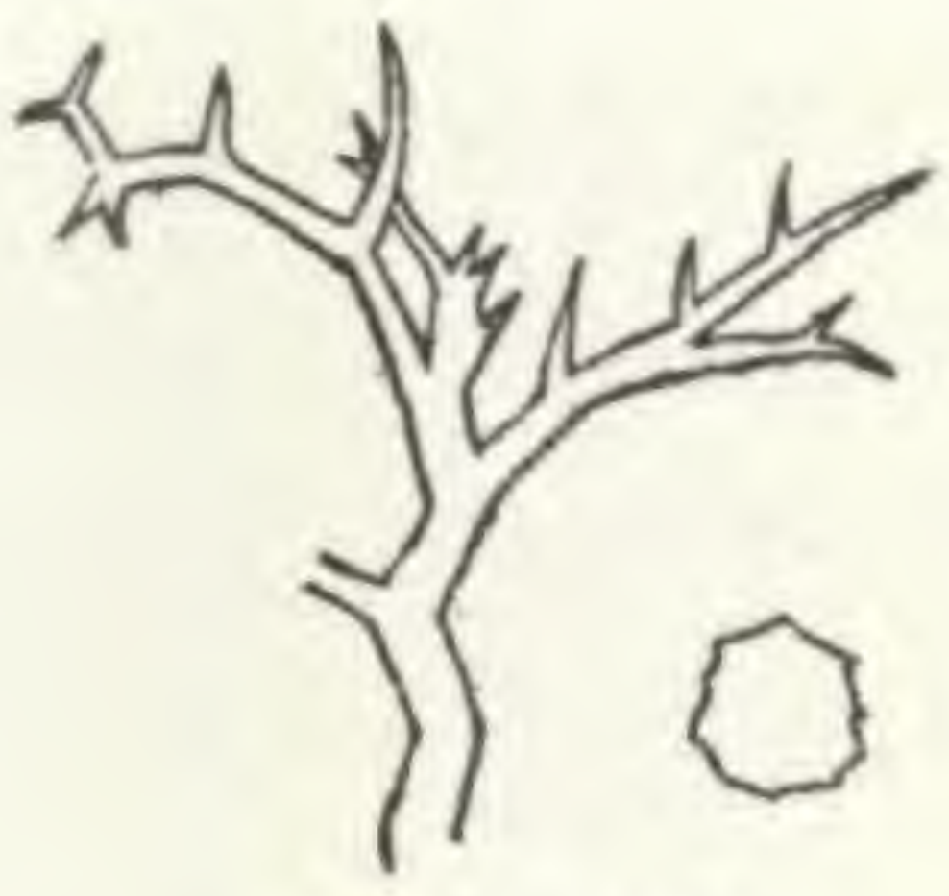

Fig. 26
H. thelephoroides. Antler-shaped organ, spore×640.

in diameter, honey-yellow under the microscope, forming in the interior of the layer and at the surface of the hymenium numerous dichotomously branched branches with subulate tips which resemble the antlers of a stag; basidia bearing 4 spores on sterigmata; basidiospores hyaline, or very nearly so, under the microscope, rough-walled or aculeate with very short points, globose, body 5–5½μ in diameter; imbedded spores honey-yellow under the microscope, even or rarely rough, 5–6μ in diameter.

Fructification 1–4 cm. long, ½–2 cm. broad, often in lobate, connected masses.

On fir logs. Washington and British Columbia. July.

The basidia of this species show best in the recent collection 120μ thick, from which the illustration has been made. The stage of the type is much thicker apparently by growth of great numbers of the antler-like hyphal branches which conceal the basidia. This species resembles closely in habit, structure, and spore characters *Thelephora pallescens* Schw. of eastern North America, except that the spores of *T. pallescens* show by magnification with a 1½-inch objective only rarely a minutely rough wall. *H. peniophoroides* differs by having cystidia.

Specimens examined:

Washington: *Carpenter, 90,* type (in N. Y. Bot. Gard. Herb., Kew Herb., and in Mo. Bot. Gard. Herb.).

British Columbia: Vancouver, *J. Macoun, v. 178,* comm. by J. Dearness, (in Mo. Bot. Gard. Herb., 8938).

27. H. zygodesmoides (Ellis) Burt, n. comb.

Thelephora zygodesmoides Ellis, N. Am. Fungi (Exsic.), 715. 1882; Cooke, Grevillea **20**:34. 1891; Sacc. Syll. Fung. **11**:117. 1895.

Type: Ellis, N. Am. Fungi, 715.

Fructification effused, thin, arachnoid-membranaceous, separable from the substratum, pinkish buff to cinnamon-buff and avellaneous, the margin of the same color, narrow, byssoid; in structure 200–400μ thick, with some rope-like strands up to 15μ in diameter next to the substratum;

hyphae pinkish buff under the microscope, thin-walled, collapsing, not nodose-septate, very loosely interwoven, 3½–5μ in diameter; basidia clavate, 28 × 5μ, with 4 short sterigmata; spores with a slight tinge of buff in collection on slide but hyaline under the microscope, ovoid, uneven to echinulate, the body 5–6 × 4–4½μ.

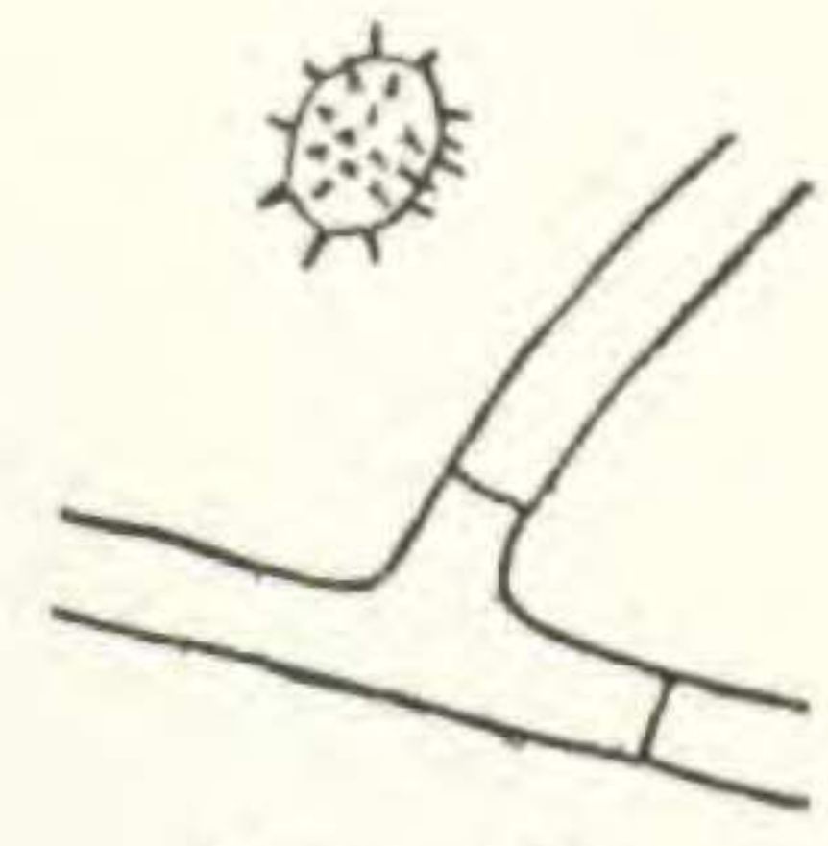

Fig. 27
H. zygodesmoides.
Spore, hypha×640.

Fructifications 2–3 cm. long, 1–2 cm. broad.

Under side of decaying pine logs. Quebec to New Jersey. August to January. Rare.

In this species a loose subiculum is present next to the wood and bears on its surface a delicate hymenium, suggesting in habit *Corticium arachnoideum* but colored. *Hypochnus zygodesmoides* is not as bright yellow as *H. echinosporus* and has paler spores than the latter and not globose.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 715, under the name *Thelephora zygodesmoides.*

Quebec: Ironsides, *J. Macoun, 266.*

Vermont: Middlebury, *E. A. Burt.*

New Jersey: Newfield, *J. B. Ellis,* type, in Ellis, N. Am. Fungi, 715.

28. H. echinosporus (Ellis) Burt, n. comb.

Corticium echinosporum Ellis, Torr. Bot. Club Bul. **8**:64. 1881; Sacc. Syll. Fung. **6**:633. 1888; Wakefield, Brit. Myc. Soc. Trans. **5**:129. 1915.

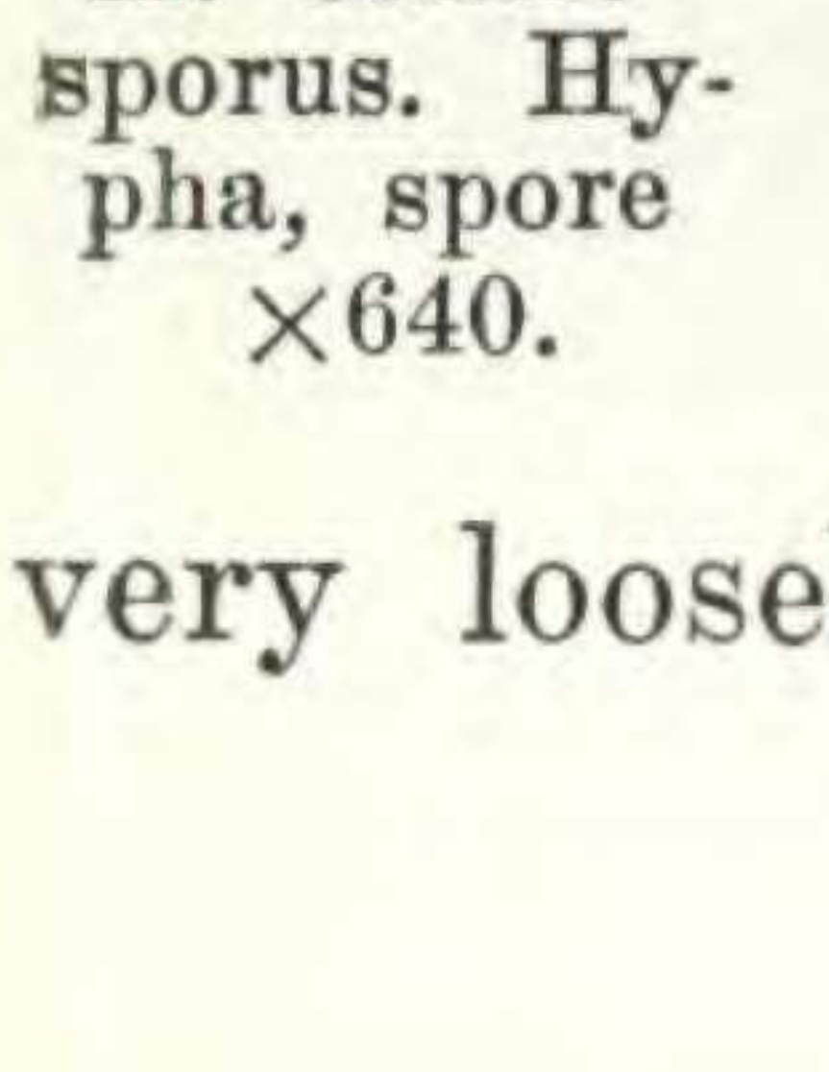

Fig. 28.
H. echinosporus. Hypha, spore ×640.

Type: in N. Y. Bot. Gard. Herb.

Fructification effused, membranaceous, separable, Naples-yellow to deep colonial buff, the margin concolorous, scanty, indeterminate; in structure 200μ thick, consisting of a thin, soft, hymenial membrane upon the loosely interwoven threads of the subiculum; hyphae concolorous (sometimes hyaline under the microscope), thin-walled, not nodose-septate, 3–4μ in diameter, lax, very loosely interwoven, suberect, branching towards the outer end to form a membranous hymenium; no cystidia; basidia with 4 sterigmata; spores concolorous (sometimes hyaline under the microscope), globose, echinulate, the body 4–5μ in diameter.

Fructification 2–4 cm. long, 1–2 cm. broad.

On rotting pine wood and bark. Canada to Louisiana and in Oregon; occurs in Sweden also. August to December.

The distinguishing characters of *H. echinosporus* are its bright yellow fructifications of somewhat a straw-colored yellow, with hyphae and globose echinulate spores of the same color. Under the microscope this tint of yellow is not very intense and may be unnoticed, and regarded as hyaline. Bresadola[1] regards *Corticium echinosporum* as a synonym of *H. pellicula* Fr. (=*Corticium mollis* var *pellicula* Fr.). The specimen which Karsten has communicated to me as *Corticium pellicula* Fr. has even spores and incrusted hyphae and is a true *Corticium*. It seems best to regard *H. echinosporus* as valid until there is found an earlier name supported by an authentic specimen. It is only rarely possible to recognize resupinate species of the higher fungi from the descriptions alone of the earlier mycologists.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 608, under the name *Corticium echinosporum*.

Sweden: Stockholm, *L. Romell, 154.*

Quebec: Hull, *J. Macoun, 385.*

Ontario: Ottawa, *J. Macoun, 668.*

New York: Freeville, *G. F. Atkinson,* Bot. Dept. Cornell Univ., 3277; Ithaca, *G. F. Atkinson, 22762.*

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 608.

Louisiana: Abita Springs, *A. B. Langlois, 2638.*

Oregon: Corvallis, *W. A. Murrill,* N. Y. Bot. Gard., Fungi of Oregon, 921, 922 (in N. Y. Bot. Gard. Herb. and in Mo. Bot. Gard. Herb., 5690 and 8937).

29. H. fibrillosus, Burt, n. sp.

Type: in Burt Herb.

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[1] Ann. Myc. 1:107. 1903.

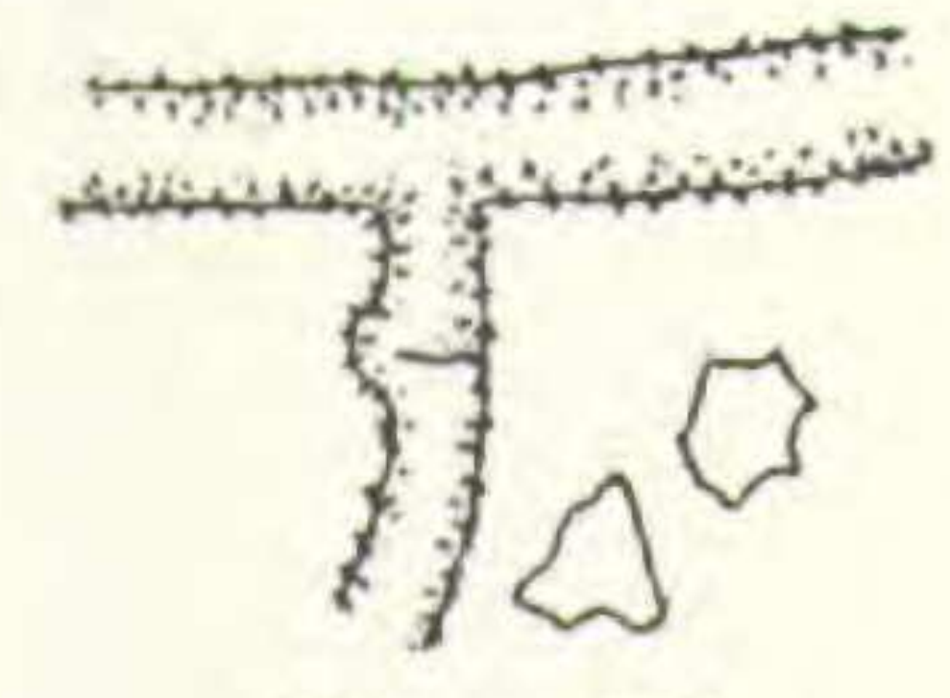

Fig. 29
H. fibrillosus.
Spores, hypha
×640.

Fructification widely effused, thin, with surface a reticulate, felty web, perforate, not separable, between olive-buff and deep olive-buff; in structure 100–150μ thick, with hyphae thick-walled, nodose-septate, giving their color to the fructification but nearly hyaline under the microscope, 3–3½μ in diameter, minutely rough-walled near the substratum and sending out loosely interwoven branches which bear clusters of basidia; basidia 18 × 5μ, bearing 4 spores on short sterigmata; spores concolorous with the hyphae, angular, the body 3–3½ μ in diameter.

The specimen, 6 cm. in diameter, is a portion of a large specimen and does not show the natural margin.

On very rotten coniferous wood. Canada. September.

This species has the general habit and color of *Corticium vagum* and is well characterized by its general habit, pale color, and small angular spores.

Specimens examined:

Canada: locality not stated, *J. Macoun, 25,* Sept. 29, 1892.

30. H. fumosus Fries, Obs. Myc. **2**:279. 1818 and 1824.

Corticium fumosum Fries, Epicr. 562. 1838; Hym. Eur. 651. 1874; Sacc. Syll. Fung. **6**:613. 1888. — *Phlebia vaga* Fries, Syst. Myc. **1**:428. 1821; Elenchus Fung. **1**:155. 1828; Epicr. 527. 1838; Hym. Eur. 625. 1874; Sacc. Syll. Fung. **6**:498. 1888; Bresadola, I. R. Accad. Agiati Atti III. **3**:105. 1897.— *Corticium sulphureum* Pers. Obs. Myc. **1**:38. 1796, but not *Corticium sulphureum* Fries. — *Odontia fusca* Cooke & Ellis, Grevillea **9**:103. 1881; Sacc. Syll. Fung. **6**:509. 1888.

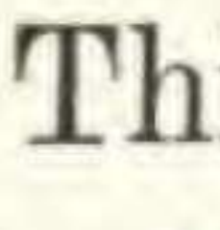

Fig. 30
H. fumosus.
Spore×640.

Fructification effused, membranaceous, separable, with the outer surface more or less overrun with intricate, branching, anastomosing threads, then granular, honey-yellow to drab and fuscous, the margin whitish or yellowish, flaxy-fibrillose, radiating; in structure about 200μ, rarely up to 500μ, thick, with hyphae longitudinally interwoven, occasionally nodose-septate, 2½–3½μ in diameter, thin-walled, hyaline, or slightly smoky if the fructification is dark colored; no cystidia; basidia with 4 sterigmata; spores white in collection on slide, ovoid, minutely echinulate with short crowded spines, spore body 3–5×2½–3½μ.

Fructifications 3–10 cm. long, 1½–4 cm. broad.

On rotten wood and bark of both coniferous and frondose species. Canada to North Carolina and westward to Washington, and in Jamaica. April to January. Common.

Collections of this species have been placed by recent authors in the genera *Corticium, Phlebia,* and *Odontia,* as an anomalous species which has no relationship to the species proper of these genera. The affinities of this fungus are with the species of *Hypochnus* by habit, dry hypochnoid structure, form of hymenial surface, and form of spore. The species is best regarded as a hyaline-spored *Hypochnus,* which is naturally connected with the dark-spored members of this genus by the pale-spored *H. echinosporus, H. zygodesmoides,* etc. The existence of an authentic specimen of *Hypochnus fumosus* is unknown to the writer, but this fungus is so distinguished among the species of *Thelephoraceae* that the lack of such a specimen is not serious in this case. Romell and Bresadola regard this fungus as the *H. fumosus* of Fries. My own study of the large series of Scandinavian *Thelephoraceae* received from Romell and Karsten leads me to the same conclusion.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 509; Ell. & Ev., Fungi Col., 1018, in both under the name *Odontia fusca.*

Sweden: Stockholm, *L. Romell, 96.*

Austria-Hungary: Tatra Magna, *V. Greschik,* two collections, comm. by G. Bresadola.

Canada: locality not stated, *J. Macoun, 27*; Lower St. Lawrence Valley, *J. Macoun, 23.*

New Brunswick: Campobello, *W. G. Farlow, 6.*

Ontario: Ottawa, *J. Macoun, 24;* Harraby, Lake Rosseau, *E. T. & S. A. Harper, 744.*

British Columbia: near Salmo, *J. R. Weir, 460, 528* (in Mo. Bot. Gard. Herb., 9207 and 22647 respectively).

New Hampshire: Chocorua, *W. G. Farlow, 3.*
Vermont: Middlebury, *E. A. Burt,* three collections.
Massachusetts: *W. G. Farlow* (in Farlow Herb.).
New York: Albany, *H. D. House & J. Rubinger* (in Mo. Bot. Gard. Herb., 6327); Alcove, *C. L. Shear, 1330;* Floodwood, *E. A. Burt,* four collections; Sylvan Beach, Oneida Co., *H. D. House* (in Mo. Bot. Gard. Herb., 7664); Karner, *H. D. House, 166, 168, 204* (in Mo. Bot. Gard. Herb., 44716, 44717, and 44725 respectively).
New Jersey: Belleplain, *C. L. Shear, 1252;* Newfield, *J. B. Ellis,* and also two specimens distributed in his exsiccati.
Maryland: Takoma Park, *C. L. Shear, 966.*
North Carolina: Blowing Rock, *G. F. Atkinson,* Bot. Dept. Cornell Univ., 4197.
Wisconsin: Lake Geneva, *E. T. & S. A. Harper, 898.*
Colorado: Portland Mine, Cripple Creek, *C. J. Humphrey, 7729.*
Montana: Evaro, *J. R. Weir, 423* (in Mo. Bot. Gard. Herb., 13273).
Idaho: Priest River, *J. R. Weir, 16, 22, 43.*
Washington: Bingen, *W. N. Suksdorf, 853.*
Jamaica: Monkey Hill, *W. A. Murrill,* N. Y. Bot. Gard., Fungi of Jamaica, 806.

31. **H. aurantiacus** (Pat.) Burt, n. comb.

Tomentella aurantiaca Patouillard, Soc. Myc. Fr. Bul. **24**:3. 1908.

Fructification obscure, aurantiacus; hyphae fuscous under the microscope, nodose-septate, 2–3μ in diameter; spores angular-globose, fuscous, 5–8μ in diameter.

On bark of trees. Guadeloupe.—Description overlooked until too late for insertion near *H. bicolor,* with which specimens should be compared.

CHANGE OF NAME

Sebacina plumbea Burt, Mo. Bot. Gard. Ann. **2**.765. 1915, should be changed to *Sebacina plumbescens* Burt, for the former name is preoccupied by *Sebacina plumbea* Bres., which is not the same species.

(To be continued.)